Local Knowledge, Sustainability and Visionscapes in Greenland

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Preface

This publication is yet another one about local knowledge and sustainability of which we have seen so many within the last ten or twenty years. The anthropology of knowledge and sustainability indeed pervades studies of the Arctic, indigenous peoples and the Third World. One of the reasons for this trend may be the process of decentralisation and empowerment of user groups increasingly seen in the world. This field within anthropology seems to be both encouraging such a process and studying it at the same time. It has become an important ingredient in applied anthropology within development projects as well as within indigenous politics. When being part of a bigger development or ethno-political project some anthropologists have done lip service to e.g. indigenous peoples and appropriated their concepts uncritically. In the North American Arctic this as been a widespread phenomenon as indigenous peoples increasingly have control over research projects; at least over project authorisation. This positive development in political and ethical terms may however trap both indigenous peoples and researchers in a deadlock if the critical dialogue is sacrificed at the expense of biased ethno-political agendas. In the on-going political struggle between local (be they indigenous or not) and central (indigenous or not) positions within an asymmetrical structure, knowledge has become an item and tool of value. In the form of *indigenous knowledge, traditional ecological knowledge*, *users' knowledge*, *local knowledge* or in the case of Inuit*, Inuit qaujimajatuqangit* it is promoted in order for local people to acquire respect and a position within the institutions determining the direction of change. In the wake of land claims these knowledge claims are the new battlefields.

Seen in this perspective Greenland stands out in several ways from the other Arctic regions (Dybbroe 1999). Due to the long colonial history (since 1721), the introduction of Home Rule in 1979 and its association with the Danish political system among other things, the discussions of knowledge and sustainability take on a different character. Some claim that the Greenland Home Rule puts Greenland in the forefront of countries with indigenous self-government and way beyond other Arctic peoples while others argue that Greenland lacks behind 20 or 30 years of Canada in terms of the elaboration of decentralised management regimes. This indeed is a paradox, and this places the knowledge debate in Greenland in a unique position compared to other Arctic regions.

This publication deals with aspects of the knowledge and sustainability debate as it takes place in Greenland. In this sense the focus is rather regional, but the general perspective is continuously present and hopefully it may contribute to discussions elsewhere in the Arctic.

The publication is divided into five parts. Chapter one (Introduction) sets out the different perspectives on knowledge research in Greenland. Chapter two (Sustainable knowledge and knowledge about sustainability) elaborates on the complex relationship between knowledge, sustainability and the maintenance of system integrity seen from three of the stakeholders in Greenland: biologists, administrators and hunters. To frame this analysis the case of beluga whaling and management is presented. Chapter three (Developing new interfaces) investigates the similarities and differences between local and scientific knowledge within an analytical framework put forward by Kalland (1994). This analysis points to several meetings points as well as decisive differences which hinder constructive dialogue between stakeholders. In chapter four (Communicating local knowledge and the art of active silence) the social and communicative encounter between researcher and local is looked into and suggestions to improve the dialogue through silence are presented. Finally in chapter five (Landscapes of memory and vision) local knowledge is positioned between the poles of memory and vision and the concepts of visionscape is introduced in order to escape some of the deadlocks in the contemporary discourse on knowledge, memory, locality and belonging.

The research project has been located at Department of Eskimology, University of Copenhagen from 1998 to 2002 and four interview trips to Sisimiut, Greenland, have

been pursued. The research presented in chapter one and two has been made possible by a research grant given through the Danish Research Councils' TUPOLAR funds. I am thankful for having had the opportunity to work with stimulating colleagues (Jens Dahl, Susanne Dybbroe, Poul Møller, Hans-Erik Rasmussen and Andreas Roepstorff) in the research project "Environmental Knowledge, Cultural Strategies and Development in Greenland and the Circumpolar North". Besides encouragement, they have added valuable perspectives and given critical comments to my research without which it would not have been possible. The Commission for Scientific Research in Greenland provided initial funding to set off the project under the title: "Visionscapes: Landscape perceptions and development strategies in Greenland". Research for the remaining and principal parts of the project including fieldwork as well as the publication itself have been made possible through a generous research grant given by the Danish Cooperation for Environment in the Arctic under the Danish Environmental Protection Agency (project title: "Landskabsopfattelser, lokal viden og bæredygtig udvikling i Grønland" [Landscape perceptions, local knowledge and sustainable development in Greenland]). This grant made it possible to organise several workshops in co-operation with the Greenland Institute of Natural Resources where researchers from Canada, Greenland and Denmark were assembled to discuss the issues. Finally, through the project group Sustainable Use of Living Marine Resources in the Arctic (SULMAR), the International Arctic Science Committee made it possible for me to attend the 2nd Nordic Research Programme symposium in Akureyri, Iceland where I had the opportunity to present and discuss the concept of visionscape.

Apart from these important financial contributors the major and most significant contributors to the project have been the landscape users in Sisimiut, the managers and the biologists in Greenland, who patiently introduced me to their activities and through stimulating conversations presented their views and thoughts about management, community life and their past, present and future livelihoods as well as resource use. I am grateful for their trust, engagement and encouragement. The conclusions put forward in this book are my own, and may not be shared by any of the contributors.

Introduction

Talking about knowledge is not easy. Knowledge seems so present and applicable but diffuse and difficult to approach at the same time. To grasp the concept of knowledge one tends to make it into a 'thing' and this reification may at first sight seem very workable. Knowledge becomes possesable, collectable, transmisable, integratable and threathened. In this sense it shares many similarities with other blurred and contested concepts as culture and identity but it maintains its significance. As with culture and identity we are trying to encircle diffuse concepts to which we apply importance – and this is often done through talking about it. The way we as humans frame communication of knowledge is multiple. I some cases it is not through words but rather through other kinds of communication like silent observation, sharing of practical experience etc. In some social contexts the communication of knowledge is framed in predefined ways which are difficult to depart from if the communication should be productive.

For me knowledge is produced and re-produced as part of the ongoing reflection on experience. Knowledge is thus dynamic and constant movement in and interaction with the surroundings. Dialogue and other kinds of communication in social space involves production and re-production of knowledge of all persons involved. A conversation with an Inuit elder talking about past hunting trips is often understood as a pure transmission of already existing knowledge to the alert listener (a young hunter or an anthropologist for example). However, the elder may in fact be seen to be involved in re- and production of knowledge making his way as he talks. Some are better at this than others and models for narrative may guide the speaker and tune the attention of the listener.

I would like to think of the production of knowledge as the production of reflection in the constant movement towards a horizon of potentials. It is in this constant reflection on experience compared to our movement and direction that knowledge gains meaning. In the Arctic, for example, no hunter – no matter how experienced and knowledgeable – can make a living by simple reproduction of previous activities or by taking things for granted. It is through a dialogue with his surrounding and through the reflexive combination of past experience, present circumstances and future expectations that he may improve his possibilities. One may in fact hold a wealth of past experiences and stories told by others but without the alert dialogue with the social and natural surroundings and the movement towards the horizon of potentials this has no meaning. Entering a dialogue (with an anthropologist for example) may in fact trigger this connection, reflection and movement.

The production of knowledge is complex and takes place in many arenas. These interfaces in Greenland have been scrutinised by researchers – by natural scientists but particularly by social scientists. The point of origin of this publication is the social sciences. Seen from this perspective, Greenland constitutes a specific location in the Arctic and this gives the knowledge debate a different momentum that in the North American Arctic. First of all the self-determination process has been radically different than elsewhere, secondly, the process of colonisation has taken place since 1721 and been based on a Scandinavian model. Perhaps because of this, traditional Greenlandic culture does not play the same significant role in politics and community perception as in North America (Sejersen in press).

The research focus on knowledge in Greenland has brought the researchers into several interfaces which put together comprise a complex picture of knowledge production and transmission.

Interfaces can be understood as meeting points which may happen or happens between persons, traditions of knowledge, political ideologies, institutions etc. Seen from an anthropological perspective interfaces are important because they are social and cultural meeting points where conflicts emerge or dissolve, were reality is negotiated, where power structures manifest themselves etc. Interfaces take place within broader contexts. It may be the colonial history, a political culture, an economic setting etc. These contexts constitute the

circumstances under which the knowledge debates and the interfaces gain momentum. Both interfaces and contexts are indeed saturated with diversity. Even single issued agendas often hide a diverse reality and ways of action and perception.

Lately, interfaces of knowledge production and communication in Greenland have been looked into by the research group in the project "Environmental Knowledge, Cultural Strategies and Development in Greenland and the Circumpolar North":

- The interface between Man and the Environment
- The interface between local, national and international institutions
- The interface between users and scientists
- The interface between users
- The interface between user and consumer
- The interface between generations

Knowledge and the interface between Man and the Environment

Since the early explorers, Western man has been fascinated by Arctic hunters and the way they were able to survive and make a living in what at first glance seemed like a harsh environment. The extensive Inuit knowledge of technology, nature and animals, sea ice, and hunting strategies have been studied and scrutinised at great length – and with good reason. Knowledge of the environment and ways to deal with it constitute the basis for an interface between Inuit and the Environment. The elaboration of knowledge associated with this interface is a continuous process which takes place to adjust, change or respond to changing settings and needs.

The Greenlandic halibut fishery was for example examined by anthropologist Poul Møller with a focus on how to develop sustainable new fishing methods. Each kind of fishing method had its own success rates and socio-economic consequences. He was not only interested in the diverse knowledge necessary for the interface between man and fish - like how and where to fish - but also the socio-cultural and political frame which fuelled the interface, and which was influenced by it, on the other hand (personal communication). He was particular interested in how the economic strategies and development efforts within the

Greenlandic fishery overlooked the diversity of local knowledge of resources and technology. The narrowing down of possible interfaces between man and the environment can indeed be in opposition to sustainability and flexible resource use strategies.

It seems to me that the knowledge used in the interface between man and the environment is the focus of most research pursued under the heading of TEK, local knowledge or indigenous knowledge. The diversity of knowledge and interfaces present world wide seem to fascinate a huge variety of researchers and is often used to question one-dimensional development strategies. In this sense, the focus on local people's knowledge, technologies and their small scale management systems has been used to criticise the modern development paradigm.

Even though many scholars are looking into questions related to the interface between man and the environment several questions are still actual: how exactly is knowledge about nature and animals produced and acquired? What is the relationship between observations, interpretation and presentation? How do we account for the diversity in observations and interpretations at the local level between users who all 'learn by doing'?

Knowledge and the interface between local, national and international institutions

The use of nature does not only produce an interface between man and the environment but also between people. This has resulted in the elaboration of a number of rights and obligations with respect to resources.

Today, the regulation of the interface between users is often managed by state or semi-state institutions and structures. State, international and local regulation and control mechanisms frequently conflict. The research of Jens Dahl indicates that the regulation by the Greenland Home Rule, very often have the effect that local hunters lose the right to make autonomous decisions and freely to dispose of means and methods (Dahl 1998: 72). According to Dahl, the Greenlandic nation building process overshadows and in some cases replaces community control and rights with national control and decision making (Dahl 2000).

The nation or state building project of the Home Rule indeed gets a very centralistic appearance. One may say that, Greenlanders manage their extensive rights to self-determination under Home Rule in a very centralised fashion giving little space for regional input and responsibilities, while Native peoples in Canada and Alaska manage their restricted rights in a decentralised fashion giving more space for different regional (and ethnic) input (Sejersen in press). These circumstances constitute different contexts for the integration of local knowledge and people. The decentralised system encountered in the North-American Arctic is built on an acceptance of Native users as meaningful actors in monitoring and management. It has fostered a series of co-management regimes - institutional interfaces - where reality can be negotiated.

Because reality is negotiated at these interfaces it is extremely meaningful to look at these interfaces between local, national and international institutions from the viewpoint of how stakeholders present and represent oneself. In other words - in the process of promoting self-determination and self-government - how do Arctic indigenous peoples increase other people's awareness and knowledge about their culture, situation and problems in institutions at different levels? The research pursued by Dahl reveals that the flow of knowledge from local, regional and national levels to the international and global level is more dominant and possible during the *process* - while the actual *result* often reflects the culture of the dominant culture, only. A similar process may be observed in the work of indigenous peoples in the Arctic Council. According to Dahl, Arctic indigenous peoples furthermore represent themselves differently according to the community they represent. One can thus see a difference between Alaskan community representation and Greenlandic nation/state representation at UN both when it comes to rhetoric and mandate.

It is also at these levels that we see an increasing use of TEK as a political tool and as political rhetoric. As a Trojan horse, TEK is used to put forward claims on political rights, obligations, and involvement without really questioning the sovereignty of the states. This makes TEK a very convenient tool for both indigenous peoples and states. I claim that the extremely reification and uniformity of TEK at these institutional interfaces have influenced local/regional ways of dealing with knowledge issues.

Knowledge and the interface between users and scientists

As part of the interfaces between different levels of institutions (e.g. local and state) new groups of people have started to interact - in positive and negative ways. The interaction between state politicians and new native political leaders have, for example, been met with some criticism from elders who see their position in community affairs and in the transmission of knowledge threatened. The traditional authorities in especially Arctic North-America have seen their influence run over by new and well educated leaders who can handle complicated financial businesses and political negotiations.

The new interfaces have also produced a conflict which has been the object of study in North America for at least three decades. I here think of the interface between users and scientists. Andreas Roepstorff (in press; 2001a,b; 2000; 1999; 1998a,b; Simonsen and Roepstorff 2000) has looked thoroughly into this conflict in Greenland. He has looked into the direct ways fishermen and fish-researchers interact with fish. The fishermen's interest in and knowledge about qualitative aspects of the life of halibut like its migration/movement and its interaction with ice, prey and fishermen improves the fisherman's success. The biologists' interest in and knowledge about halibut is much focussed at the quantitative aspects. This does however not exclude an interest in qualitative aspects of halibut life. But where a fisherman's success is dependent on contextual knowledge (knowledge about specific fish he wants to catch) and input from fellow local fishermen, the researcher's success is dependent upon abstraction from contextual knowledge and inputs from distant equals (i.e. biologist in Canada). Biologists and fishermen are embedded in different knowledge traditions, have different success parameters and different perceptions of what constitute interesting and valuable knowledge. The conflict between users and biologists has its root in these differences among other things.

Roepstorff has also pointed out that although these two knowledge traditions are quite different, there are similarities as well. Scientific as well as local knowledge are inseparable from intentionality, technology, networks, historicity and memory, in other words inseparable from social practice. Earlier, biologists worked more closely with local fishermen, but this co-operation has ended to a great extent in order to pursue more quantitative research valued by the international scientific community and the Home Rule managers. Put in a historical perspective, contextual knowledge and involvement are not foreign to biologists. Additionally

the conflict itself has influenced a decontextualisation of knowledge among some fishermen and hunters. When we look at interfaces or desirable interfaces and the flow and production of knowledge within these interfaces the diversity of knowledge traditions between stakeholders emerge but also the diversity within each tradition. When the interface becomes too politicised the question of representation develops into a problem to confront. When biologists consult local hunters and fishermen it is important in depth to reflect on their representativity: Who is a local and how well does a partner in a discussion represent the views and experiences of other locals. This question pervades even when the local representative is pointed out or elected by the local organisation of hunters and fishermen (Uldall Jensen 2001). In political discussions the question of representivity is apparent. The participation of local hunters in some management negotiations are often understood as the integration of a user group and a local perspective. But the local hunters may consider his position in the discussions in a totally different way: not as an representative but as a expert consultant for example. This problem may have consequences for local acceptance of new regulations and compliance.

Knowledge and the interface between users

The question of how users relate to each other with relation to resources - i.e. property rights, division obligations etc. - has also been studied thoroughly by social scientists throughout the Arctic. However, the knowledge of these rights and obligations - which are essential for users - has been overshadowed in the debate about knowledge and sustainability which focuses on the users' knowledge of resources primarily.

Hans Erik Rasmussen has focussed on these issues (1994a,b). His research reveals the clash between the different property regimes when reindeer ranching was introduced in Greenland. The clash between private ownership of animals, common property of land and uncertainty of state property rights has created conflicts between users of the land as well as problems for sustainability. The diversity of rights regimes has been the source of many problems at this interface.

In Sisimiut, I have studied the development of rules employed when dividing a catch of beluga whales. The changing rules of division reflect changing circumstances as well as

ways to deal with these circumstances (1998, 2001). Generally speaking, there has been three major ways to divide a catch of beluga whales.

1. Following a rule based on role in the hunt with different shares to each participanting hunter
2. Following a rule based on participation in the hunt with equal shares to all participanting hunters
3. Following a rule based on socio-economic belonging of participating hunters with limited shares to some hunters

There is a historical movement from 1 to 3 but today, one can see all rules in use - sometimes simultaneously. These systems of division are negotiated continuously, and knowledge of different rules are important to avoid conflict. A concrete interface is the flensing scene where production of knowledge about different ways to divide a catch becomes apparent.

I consider knowledge and negotiations of property rights and rules of division - relations between people with respect to a resource - essential for the management regimes and thus sustainability. One is struck by the diversity of ways to organise and the continuous negotiation of these matters. My research indicates that people are preoccupied with establishing systems that can be agreed upon as equitable, and I conclude that people understand sustainability as much as social continuity and integrity as the ecological aspects of the concept.

The construction of systems to deal with the distribution of rights are indeed triggered by the regulations introduced by the Home Rule. Furthermore, the economic aspirations of the hunters fuel the conflicts and influences the interface between users. For most hunters it is important to organise their activities in accordance with the market. Knowledge of the market seems to be increasingly significant for the hunters' success. Some may choose to go beluga whaling for a week while others may stay behind and turn seal hunting into a profitable endeavour exactly because there is not so much competition during the period of beluga whaling. The hunting strategies are as much influenced by market possibilities as other factors, normally pointed out (rights, animal presence, technology, skills etc.), and hunters continuously try to keep informed about the state of the market (see Sejersen 1998:

12-50). The central importance of the meat market in hunting strategies and household stability contrasts to the situation in the North American Arctic, where the meat market is neither very elaborate nor widespread (Usher 1986: 54-57). In Greenland hunting is looked upon as an *occupation* which should be developed to make it profitable. The development of the market is ceaselessly debated by the hunters' organisation and the Home Rule government in order to create the best opportunities for the hunting *occupation*. Lately, whaling for fin whales, for example, has been threatened because of evaporating national markets (Anonymous 1998a). This contrasts much to the situation in Canada, where hunting is primarily looked upon as *subsistence* and a *way of life*. As a result knowledge is framed differently and it influences - among other things - the ways knowledge is shared.

In Greenland, hunters and fishermen continuously discuss issues relevant to their occupation. It may be the presence of seals, the whereabouts of trawlers, weather conditions, new hunting regulation etc. When a hunter returns from sea he is often met by fellow hunters who are eager to hear about his trip. The dialogue in the harbour or at sea when two boats stop briefly for a short conversation - which they often do - centres around observations, experiences and interpretations. Without this sharing of information on, for example, weather and hunting locations, each hunter should be a self-contained system - an impossible task because things are changing all the time. Hunters indeed need networks. The VHF radio is used daily to spread and receive information among hunters at sea. Even the presence of animals may be announced over the radio - resulting in a number of boats turning up at the same hunting location within few minutes. Hunting partners and good friends help each other by exchanging information on the VHF - a practice which may in fact help other hunters although they were not addressed. "We have no secrets among us - we help each other", a hunter explains. But the focus on markets has turned hunters into competitors for limited resources. If a hunter in Sisimiut does not catch seals quickly enough, for example, he may turn up too late at the meat market that day and will be unable to sell his catch at the already saturated market.

Although exchange of knowledge is expected, the keeping of *secrets* is also widespread and accepted. Knowledge is both exchanged publicly among hunters, but also kept strictly secret. In the latter case good friends and hunting partners may exchange secrets to help each other. Owing to fierce competition on resources and markets in the towns, hunters and fishermen may be reluctant to exchange elaborate knowledge in some circumstances.

Some hunters, for example, are very aware of the problems associated with the public announcement of beluga whale sightings over the VHF. If they do so, most of the vessels in the neighbourhood will appear rather quickly at the site. Instead, some hunters - especially trawler skippers - now use cellular phones to limit the exchange of knowledge within a well defined network. A group of hunters (occupational as well as non-occupational) may decide in a similar way to use a specific channel on the VHF instead of the public one in order to limit the groups of listeners which are possible competitors. Generally speaking, hunters gather and interpret other hunters' advice and observations when deciding where and when to go. Today, hunters operate in a huge hunting area (see e.g. Nielsen 1998: 76), and it is impossible for each hunter continuously to produce the necessary knowledge of the area on his own. Furthermore, hunters use phones to keep in touch with hunters from communities outside their hunting area. Observations and catches from these locations put the accessibility and presence of resources in perspective. A hunter in Sisimiut may thus decide to move further north within his normal hunting area, as his friend in Qeqertarsuaq, about 275 km. further north, spots an increasing number of whales.

Consequently, most hunters try to keep track of the other hunters' whereabouts. A number of minute and relevant details like exact hunting location, size of catch and time used compared to the weather and ice constitute valuable information when deciding where to go or not to go oneself (similar observations have been made in the Icelandic fisheries (Pálsson 1994b) and the Danish fisheries (Vestergaard 1992)). The strategies and decisions of each hunter are based on the observations, movement, success and locations of the other hunters, and cannot be associated independently with each hunter's knowledge of resources and skills.

As a result some hunters are reluctant to tell interrogating fellow hunters, anthropologists or biologists the exact location of their hunt and observations. The answer - which is of course expected - may be framed in a very general way and refer to a huge and in a sense undefined area like "I caught my seals north of town" or "I go caribou hunting in the neighbourhood of Kangerlussuaq". Some even lie about their whereabouts in order to conceal a good hunting spot - be it permanent or temporary. This is especially the case with ptarmigan and some fishing locations (secrecy about fishing sites is also noted in Norway (Eythorsson 1993), in Denmark (Vestergaard 1989) and in Iceland (Pálsson 1994a, 1994b)).

Thus the gathering and dissemination of knowledge within the community of hunters is twofold. On the one hand, there is an openness when hunters exchange knowledge and help each other. On the other hand, an exclusivity is created when hunters keep secrets to themselves or within defined social networks. Knowledge management in these open and closed spheres is a skill which affects possibilities and success. Knowledge management requires that hunters are both able to protect secrets and to exchange (give/receive) detailed observations and experiences. Researchers - e.g. anthropologists and biologists - may find it difficult to enter this closed sphere of knowledge which is not necessarily exchanged on request.

A general basis for most laws and rules regulating hunting and fishing in Greenland, is the perception that natural resources are the property of Greenland. All residents with a valid hunting licence are able to exploit wildlife resources. Except for a few species, there are no limitations on hunters' user rights. All hunters in Greenland are, for example, allowed to hunt beluga whales regardless of the hunter's economic and social position. When everybody has a right to hunt everywhere (with a few exceptions of course), competition increases. Despite the common user right to beluga whales, not every hunter has the ability to predict and pursue the whales successfully. Competition is reduced by limiting other hunters' chances to get access to the whales - primarily by excluding them from channels of knowledge exchange by using cellular phones instead of the VHF to announce beluga sightings.

Thus a hunter's success and the stability of his household are not only dependent upon the presence of resources, hunting regulations, national and local distribution of rights and the hunter's skills, but also dependent on the market possibilities and knowledge management.

Knowledge and the interface between user and consumer

The question of resource rights brings me to the next interface, which is the interface where the producer shares or sells his product with other consumers. Today, at least in the Greenlandic towns, hunters are preoccupied with the commercial aspects of their activities. In Sisimiut the market possibilities are extensive and diverse. In order to benefit economically as much as possible from one's catch each hunter has to have elaborate knowledge of the market. The importance of the market has also made it necessary for hunters to improve the flow of knowledge about their occupation and the standards of hygiene to the consumers in order to maintain and increase the market. This has become even more important today, when new consumer standards are emerging and when the focus on pollutants in country food may frighten the consumers.

Sharing practices - and thus interfaces between producer and his intimate social environment - have changed in the wake of the more commercial attitudes of hunters. Sharing is, however, still a highly valued moral code and is often practised. But the fact that the commercial element of the hunt sometimes has a higher priority than the free sharing of meat and *mattak*, has produced mixed responses in some Greenlandic communities as also noted by Mark Nuttall (Nuttall 1991b: 220) and Susanne Dybbroe and Poul Møller (Møller & Dybbroe 1981: 139). Hunters are caught in a moral dilemma (the trader's dilemma) between socio-cultural norms and economic requirements. The commercial element is accused of disrupting the co-operation and maintenance of the community and of eroding the traditional moral codex of the hunting complex which has sharing as one of the main pillars. Hunters and family members are quite aware of the dilemma and they try to solve the dilemma in various ways. The use of family members as middlemen at the open air meat markets is one way to integrate them in the flow of meat and cash. Sharing on request and also payment by family members for meat are yet other ways to deal with this dilemma (Sejersen 1998).

Due to the limited resources and limited markets, hunters have become competitors to a certain degree. My research indicates that it has influenced the distribution and sharing of knowledge among hunters, and one sees certain kinds of knowledge being turned into secrets or exchanged only within small and well defined social networks. Withholding knowledge about the presence of resources has become a way to limit other hunters' possibilities - to a certain extent - in circumstances where access and user rights are not

exclusive enough. I see this, among other things, as a product of the establishment of equal user rights in the wake of the nation building process pursued first by the Danish and later by the Greenlandic Home Rule government itself.

Today, the issue of rights is increasingly influenced by the commercial aspirations of hunters. Rights to resources (user as well as access rights) have become heated issues. In Greenland, most people agree that small scale fishing and hunting should be protected and elaborated as an occupation. But even though the focus is on occupation and economic development for hunters the idea that hunting is a cultural activity to benefit all Greenlanders complicates the distribution of rights and privileges. The Home Rule is caught in a limbo where a focused attention on the development of a hunting occupation would lead to severe restrictions in the hunting possibilities of many Greenlanders. On the other hand the open-minded attitude towards the rights of all Greenlanders to pursue hunting which exists now, erodes the possibilities of the hunters who try to make a living from hunting as an occupation. No matter which direction the Home Rule takes, it has severe social, economic and cultural consequences. That might be the reason why the Home Rule is reluctant to take a firm stance on the issue.

Knowledge and the interface between generations

The commercial elements of hunting and fishing have influenced sharing to some extent and thus the interface between people. Additionally, the interface between people and in particular between generations has been looked into by Susanne Dybbroe in the research project "The organization of knowledge and the transmission of cultural competence in urban and local communities" (a TUPOLAR project). Her research indicates a gap between generations - a gap that is produced due to shifting aspirations and points of references of the young as well as their parents. Young people - especially in the bigger towns in South Greenland - tend to go sailing alone or with friends. Hunting as a complex and a shared space where the parents are able to be together with their children and transmit practices, knowledge and values are thus eroding. Even in Sisimiut some of the successful hunters claim that they are self-made hunters.

From time to time, one encounters comments and statements about young people's lack of knowledge about hunting and nature. Although local knowledge is emphasised as important by most Greenlanders, local knowledge is seldom put forward explicitly and has rather taken up a position as an emblem. Hunting activities tend to gain the same symbolic position and hunting has changed into a *rite de passage* solely (i.e. that young hunters often only kill one caribou or one seal to be able to enter manhood).

One may point out this gap as part of Westernisation. In Alaska and Canada, the gap is associated with *cultural loss* and elders are complaining that the gab has resulted in a movement of the youth away from the right path of the ancestors (Sejersen in press). Talking about the interface between generations, old people take up a different position in North America than in Greenland. In North America they are given authority in many public matters and are highly respected for their knowledge of traditions and values. They are considered the bearers of tradition and the locus of traditional knowledge - one thus have to consult them to get traditional knowledge. The reification and codification of knowledge which are encountered in North America are not seen in Greenland. Here, old people do not have the same status in the public sphere. On may, provokingly, say that there are no elders in Greenland - only old people. Communities and the young people seldom look up old people to gain knowledge and values for the good life. Some young Greenlanders even complain about the vague, political neutral and Danish friendly attitude of their parents. One also sees many Greenlandic families where the children are urged to get an education and urged not to become hunters and fishermen as their parents. In this sense, the parents themselves are expanding the gap by urging their children to pursue the good life outside the hunting complex.

I claim that this gab between generations - discontinuity in the generational interface - can be seen as a fragmentation of society and a fragmentation of strategies for the good life. However, Greenlanders seem to accept the fragmentation and perhaps even encourage it compared to Inuit in North America who bewail the children’s interest in non-native culture and talk in great length about cultural loss and the revival of traditional values. There seems to be a different emphasis on the historical span which knowledge has or in which it is supposed to have been transmitted. In North America, the anchoring of knowledge in tradition or ancestral time is indeed more prominent. This can be taken as a cultural orientation as well as a manifestation of boundaries in a highly political environment

concerning aboriginal rights. In Greenland, people turn much of their attention to development as well as their position and control in this process. Cultural values are not expressed explicitly as in the North-American Arctic. The gab and the social fragmentation has resulted in a variety of values, gender roles and definitions of what constitutes important knowledge within families and communities (Sejersen submitted).

The transmission of knowledge from one generation to another also raises the question of what TEK is. According to Gadgil, Berkes and Folke (1993: 151) it is "a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings with one another and with their environment". Marianne Lykke Thomsen (1993) has a similar view which makes knowledge very reified - she says that knowledge is experiences stored in a collective memory bank. However, on the basis of halibut fisheries, Andreas Roepstorff questions this emphasis on continuity and the completeness of knowledge. He claims that knowledge does not appear to be explicitly *stored* but rather *embedded* in the exact choice of technology, fishing place and practice (1998a: 108-113).

Negotiating new interfaces between memory and vision

Each of the above mentioned interfaces result directly or indirectly in processes of continuity and discontinuity. Even though local practices have been situated firmly in memory and tradition when it comes to Inuit it is also driven by new concerns, experimental practices and vision. It is this double nature of local practices which gives local knowledge a dynamic character. Existing and future local practices are the practical bricks on which sustainability is build. Sustainability, as a concept, exactly gains its momentum in the interface between past, present and future. However, social science research has been reluctant to investigate the relationships between the local emphasis on tradition and community continuity on the one hand and the local practices and perceptions which are pointing towards the future on the other hand. In fact, local people do not find the future or the thought about it as alien as many anthropological studies seem to indicate with their retrospective analysis. A focus on visions is a field which could open up new understandings of community strategies and concepts of local knowledge and sustainability.

All projects looking at knowledge production in Greenland deals with the diversity not only *between* but also *within* different knowledge communities. This is indeed an anthropological challenge which goes against the lip service paid to TEK seen in many scientific contexts.

Sustainable knowledge and knowledge for sustainability

Sustainability is like knowledge an elastic concept. Even a simple question like "Is hunting of beluga whales in Greenland sustainable?" presents us with a number of problems. The answer depends upon one's point of departure, how one understands sustainability and how one produces knowledge about beluga whales. Its elasticity does not, however, make sustainability a concept without concrete meaning for people involved in the management of resource use. This chapter outlines three major traditions from which knowledge is produced in Greenland and from which tools for sustainability. I argue that the essence of sustainability is about protecting the *integrity* and continuity of a particular system and to produce *strategies* for that purpose. Understood in this way, sustainability can be applied to the environment (natural system), the socio-cultural system and the political system. This application differs from the narrow and prevailing perception of sustainability as solely dealing with ecological sustainability. Elaboration of strategies to enhance a system's continuity and integrity does not necessarily mean that the result or even intentions of the strategies are to further ecological sustainability. Even though this may seem as an erosion of the sustainability concept, such an application may inform us about some of the multiple agendas about sustainability which are present in the management controversies.

Sustainability has been a positive buzzword for more than a decade, and it has found its way into nearly all political agendas. The global quest to achieve sustainability has turned into a strive to find *the* right formula. The need to talk about sustainability stems from the widespread perception that man's present way of life threatens our survival. Something drastic has to be done to change this future scenario, it is argued by many. The

esteemed World Commission on Environment and Development proposes that we must change our attitudes. In its milestone publication *Our Common Future* (1987) it informs us that "...sustainable development requires the promotion of values that encourage consumption standards that are within the bounds of the ecological possible and to which all can reasonably aspire" (p. 44). The argument is that man has to be elastic in his perceived needs (which are "socially and culturally determined" (ibid.: 44)) to be within the limits of what nature can sustain. Man is the variable, nature is the constant. This is a critical formula, however.

First of all, we cannot talk of the environment and sustainability without positioning these concepts in a socio-cultural project. Thus the discourse on sustainability is not about the environment alone. Indeed, as Maarten Hajer (1996: 247) says, "...the key question is about which social projects are furthered under the flag of environmental protection". Discussions about the state of the environment and management initiatives are deeply embedded in the social world, and arguments are linked to incentives for social action and social change. Consequently, different socio-cultural projects have different definitions of sustainability. Although man can be said to be one of the variables in the formula, there is still the question of *who* should determine *how* man should change himself? There are many parties involved each with their projects, interests, practices and knowledge.

Second, nature is not constant. Nature can be described and understood in many ways, which makes it difficult to define "the bounds of the ecological possible". Scientists are often allotted the monopoly to demarcate the ecosystem, determine its limits and its carry capacity. The work and concepts of scientists are usually considered descriptive rather than cultural constructions. Hence, the work of scientists are not submitted to the same kind of normative evaluation as is the case with other parties making statements on nature and animals. The tradition of scientific knowledge production is, however, just one out of several traditions.

Third, in reality the strategy for sustainability is a compromise between different parties (actors) within the political sphere. This sphere is saturated with political and administrative traditions and legal limitations. Thus, representation within political

processes becomes a crucial aspect of the elaboration of strategies for sustainability and concrete regulations.

This chapter analyses a concrete management controversy which takes place in Greenland. It involves conflicting understandings of the status of beluga whales and conflicting views on how to manage the hunters in order to reduce the catch level.

The parties in the controversy have produced an array of different management tools which are supposed to lead to a sustainable hunting practice. These suggestions (referred to in the chapter title as 'knowledge of sustainability') are scrutinised to make the socio-cultural agendas more transparent. They are put forward and legitimised on the basis of different *traditions* of knowledge production - traditions which, by some parties, are understood as solid and unquestionable. The chapter fleshes out the knowledge traditions and their positions within the political sphere. Each party refers to and relies on a specific tradition of knowledge production which is perceived to be valid because it embodies *continuity* and *integrity* (referred to in the chapter title as 'sustainable knowledge'). At this stage it is important to underline that continuity and integrity do not rule out dynamics and change within each tradition as long as the tradition as such is perceived to be upheld. It is also worth noting that the strive to obtain and maintain a tradition's sustainability does not necessarily entail that it will survive. People promoting and protecting a specific tradition in a very conservative way may actually end up with a worn out tradition. Biologists ignoring users' knowledge, hunters ignoring biologists' advise and managers ignoring users' needs and suggestions may all be supporting each their short-lived tradition.

Beluga whales: Behaviour, catch statistics and hunting

The beluga whale (*Delphinapterus leucas*) is a small toothed cetacean feeding on Greenland cod, Greenland halibut and Atlantic redfish. Due to its recognisable white skin it is often termed white whale (Watson 1981: 165); in Greenland it is often referred to as *hvidfisk* and *qilalugaq qaqertaq*. Adult whales have an average length of 4 to 6 meters and weigh in average between 400 and 1,300 kg (ibid: 166). It is present in all Arctic waters and is a migratory species. Beluga whales which are hunted in Greenland,

primarily overwinter immediately south of the polar circle in the loose and rapidly shifting pack ice in Davis Strait and occasionally in the Disko Bay area (Kapel 1977: 507), although some overwinter in the North Water along southeastern Devon Island and in eastern Jones Sound and Smith Sound (Heide-Jørgensen et al. 1993: 2323). Occasionally, during January and February, groups of beluga whales are trapped by sudden ice formations in the Disko Bay area. When this happens a large number of whales can be caught (the historical record shows incidents where hunters have been able to catch more than 1,000 beluga whales in *one* ice entrapment (Siegstad & Heide-Jørgensen 1994: 155). During the summer period (late June to mid-September), beluga whales concentrate in the Canadian High Arctic where large congregations are found in some of the bays adjacent to Lancaster Sound and Barrow Strait (Heide-Jørgensen et al. 1993: 2323).

Depending upon ice-conditions, West Greenlandic hunters encounter beluga whales from February (Sisimiut) to June when the whales migrate north towards their summer location (they are occasionally taken in Avanersuaq municipality in July-August). Later in the fall (late September through November) the whales migrate south again along the west coast. During this fall migration large numbers are usually taken in Upernavik municipality (ibid.: 2323; Kapel 1977).

Hunting of beluga whales is pursued from small as well as large vessels at open sea, as drive and encirclement hunting (in the Vaigat Channel and Upernavik municipality; encirclement hunting was however banned in 1995 (Hjemmestyrets bekendtgørelse nr. 30 af 11. oktober 1995 om fangst af hvid- og narhvaler)), with nets beneath the ice, and hunted directly from the ice edges (especially in Uummannaq, Upernavik and Avanersuaq municipalities).

Heide-Jørgensen, a Danish biologist, argues that the migration pattern makes the beluga whale population especially vulnerable to over-exploitation because of the whales' coastal habits. "During the autumn they move south along the west coast of Greenland, passing near a number of settlements with intensive white whale hunting and where especially females are taken in large numbers. These coastal areas may act as 'bottlenecks' for the whale population" (1994: 148). The size of the beluga whale and its migration pattern makes it a valued pray to pursue.

The catch statistics indicate fluctuations in the catch of beluga whales. Factors involved may be natural causes, occupational priorities (for example organised drive hunting), introduction of hunting regulations, changes in resource combinations, demographic changes, introduction of new technology etc. According to Albrechtsen (2001: 11) the catch of beluga whales in Upernavik municipality increased from an annual average of less than 20 up to the 1960s to a maximum of 661 in 1992 (Heide-Jørgensen & Rosing Asvid 2000). Albrechtsen sees a close relationship between this increase and the introduction of motorised and bigger vessels. In the period from the first aerial survey of beluga whales (1981) to 1999, the total annual landing (average 1981-1999) was approximately 665 in Greenland with a maximum of 1063 in 1990 and a minimum of 275 in 1988 (Heide-Jørgensen & Rosing Asvid 2000).

Hunting of beluga whales is a highly appreciated activity due to its cultural, social and economic significance. The skin (called *mattak* in Greenlandic) of the beluga whale is considered a Greenlandic delicacy and is in great demand. It is often served as a snack or as part of a larger meal. During special celebrations like christening, confirmation, wedding, birthday etc. a multitude of Greenlandic products and dishes are served to the guests. Mattak is probably one of the most popular. Serving mattak and other foods stemming from Greenlandic resources is understood as hospitality *par excellence* linking hosts and guests to a common cultural frame of reference. "Some of these foods can be difficult to procure, which adds to the festive mood and marks the occasion as a particular Greenlandic one" (Kleivan 1996: 154; see also Petersen 1985: 299). Greenlandic foods are strong symbols of Greenlandic identity and are used to celebrate and live out the good life.

Drive and encirclement hunting of beluga whales, which was pursued primarily in Upernavik and in the Vaigat Channel, was an important community activity as described by Jens Dahl (1989, 1997, 2000) and Bo Albrechtsen (2001) until it was banned by the Home Rule government in 1995. The hunt was a community affair carrying great socio-cultural significance. The hunt and especially the division of the catch constitute platforms for people to establish and re-establish social positions, networks and a common feeling of belonging within the community. It was furthermore a way to celebrate the community and its viability as such.

The demand for beluga whale mattak makes beluga whaling an important activity economically speaking. Unlike in Canada, the market for country foods is large and extremely elaborated. During 1990, for example, West Greenlandic hunters produced kg. 155,216 of meat and mattak with a total value of Dkr. 6,131,976 from primarily beluga whales but also narwhals (Direktoratet for Fiskeri, Fangst og Landbrug 1994b: 61). In October, a few days of hectic beluga whaling in one of the small communities in Upernavik municipality may provide the major bulk of the annual income obtained from hunting and fishing. From Saqqaq, a small community located in the Disko Bay area, Dahl makes the following observations on the economic importance of beluga whaling:

> "the economic position of beluga whale hunting and its role as a manipulative factor is easily understood when its commercial value (potential or real) is compared with other hunting products. In 1980-81 the estimated value of mattak alone - *if* sold - equalled the commercial value of all traded fishing products (including capelin) plus sealskins, i.e. of all other *de facto* hunting and fishing products traded to the Royal Greenland Trade Department [called the Greenland Trade from 1986]" (Dahl 1989: 30)

After a successful beluga whale hunt, a hunter's household has large amounts of meat and mattak which is generously shared to other households connected by ties of kinship or friendship. Additionally, the mattak and meat is sold at the local meat market or to institutions in order to produce cash. For many households this income creates an economic surplus which can be saved for lean times, be used to improve the living conditions and the means of production of the household. Thus, many hunters can afford to buy a new rifle or a new outboard motor after the beluga whaling season. In contrast to seal hunting, which is a *recurrent* activity, beluga whaling represents a *strategic* activity (Sejersen 1998). Both types of activities are important to sustain the household. The recurrent activities support the household on a daily basis throughout the year while the strategic activities create economic elbowroom within a relatively short period - an elbowroom which recurrent activities seldom produce. The elbowroom opens up for a whole spectrum of possibilities (the manipulative factor, as Dahl calls it (1989: 30)) which are important for the social and economic reproduction of the household.

The beluga whales constitute an important economic and socio-cultural resource which are indeed treasured by the Greenlandic communities. Lately, however, biological research has been put forward which indicate that the beluga whale population is decreasing with great speed.

Biological research on beluga whales

Despite the evident importance of beluga whales, the Ministry of Greenland did not prioritise research into the state nor structure of the beluga whale population. However, in 1984 the Greenlandic Fisheries Research Institute (Grønlands Fiskeriundersøgelser) was able to appoint a biologist to work with small cetaceans. Four years later, in 1988, the institute was placed directly under the authority of the Greenland Home Rule. Beluga whales were put on the research agenda and research funding started to flow more continuously and generously than under the Ministry of Greenland. This priority was also linked to the increased international awareness and focus on small cetaceans in general. World wide, international environmental organisations and the International Whaling Commission have put pressure on hunters and fishermen who catch small cetaceans intentionally or unintentionally. These institutions are mainly concerned with the health of the populations of cetaceans, the high catch levels and the weak or non-existing legislation. However, some organisations are arguing in lines of a total whaling stop due to ethical reasons (Sejersen 1994, 1998). On the national level, the Home Rule is also met with concern over the state of the beluga whale population. Increased activities with skiffs and trawlers are thought to increase the hunting pressure and disturb the noise sensitive whales.

Aerial surveys have been conducted in March 1990, 1991, 1993, 1994, 1998, 1999 (Heide-Jørgensen et al. 1993; Rydahl & Heide-Jørgensen 2001) and compared to those in 1981-1982 (McLaren & Davis 1983). The aerial surveys are conducted by two observers flying over a specified and demarcated area between 66^{o}N and 70^{o}N using a definite speed, height, technology and technique. The ice coverage is described while observations take place (see Heide-Jørgensen et al. 1993 for a precise description of the methods used). To make the surveys comparable it is of paramount importance that they are pursued in the same manner and at the same time of the year. Although there have

been several differences in survey procedures and ice conditions, the change in index numbers from approximately 2,000 to 400 indicates a severe decrease in the abundance of beluga whales (Heide-Jørgensen 1991: 5). Heide-Jørgensen et al. (1993: 2335) conclude that the population of wintering beluga whales has declined. It is not possible to provide realistic figures of the size of the entire population from the survey data, because no correction for submerged animals is used. However, the figures can be used as indexes of relative abundance, the biologists argue (Heide-Jørgensen et al. 1993: 2334).

To get a clearer picture of the general state of the beluga whale population, biologists collect information from other sources than aerial surveys. Hunters are called upon in a governmental order to send in hunting lists and the lower jaws of the hunted beluga whales. Biologists have also collected a large amount of samples themselves. The tooth and tissue samples are used to determine age, sex, stock identity and content of pollutants (Heide-Jørgensen 1991). Since 1990, biologists have also attached satelite transmitters on beluga whales in order to track their migration activities and routes.

All in all, the surveys demonstrate a decline in sightings of the West Greenland winter population of beluga whales and it is estimated that the average decline since 1981 is in the magnitude of 5 per cent per year (JCCMNB 1994: 3). The reduced sightings are understood as an indication of a decrease in population size. On the basis of the survey figures, potential population trajectories have been made on the request of the Joint Commission on the Conservation and Management of Narwhal and Beluga (JCCMNB). These simulations based on two population growth models estimate that the beluga whale population may be between 1,920 and 10,185 (JCCMNB 1994: 4).

The JCCMNB, which was established by Canada and Greenland in 1989, concludes on the basis of these research results that the catch of beluga whales in Davis Strait is not sustainable. The Scientific Working Group of the JCCMNB suggests that a realistic catch would be between 43 and 78. To increase the possibility that the population may be allowed to increase, it is however necessary to reduce removals to at least 20-40 per year, and even at these exploitation levels the recovery will be exceedingly slow according to the working group (ibid.: 5-6). If one wants the population to reach its 1981 size, full cessation of hunting for 23 - 46 years would be required (ibid.: 6).

From concern to crisis

The biological research supported the concern which was aired from several parties. Consequently a management crisis was triggered. JCCMNB urged Canada and Greenland to implement management regimes in order to reduce hunting of beluga whales substantially. "The rate of decline of the stock requires that the effective implementation of such measures should take place on an urgent basis" (JCCMNB 1993). The Home Rule Department of Fisheries, Hunting and Agriculture had to follow the recommendations of JCCMNB and make initiatives to create a management regime which could limit the hunt.

Concern was suddenly turned into an urgent need to implement tangible hunting regulations. When the JCCMNB concluded that the hunting of beluga whales was not sustainable the whole issue of sustainability firmly entered the whaling discussions. This was further stimulated by JCCMNB's calculations stressing that the population could be extirpated as soon as 2005 (JCCMNB 1994: 4). The biological conclusions and scientific recommendations forced more parties to enter the discussions. Home Rule politicians, bureaucrats, Inuit Circumpolar Conference, the Association of Fishermen and Hunters in Greenland (KNAPK), and the hunters themselves had to address the question of sustainability directly.

The discussions centred around the following two problem complexes:

1. was the alarming conclusion of the biologists correct?
2. how should the hunt be regulated?

The discussions and the pressure from JCCMNB created an atmosphere of urgency. Even though some hunters did not agree with the conclusions and thus could not see any reason to implement severe hunting regulations, a sense of urgency spread to them as well. They could easily see that some sort of regulation was coming and had to present their positions, knowledge and perspectives in order to protect their valued whaling activities.

This widespread sense of urgency and pressure, the need to build a management regime from nearly nothing, and to have many interests and perspectives negotiated in a short time are reasons to term it a crisis situation.

In the following, I will flesh out some of the parties' ideas of how sustainability can be understood and obtained. Each suggestion for sustainability is promoted by referring to a certain tradition of knowledge production. The discussions reflect that people do not only refer to knowledge of resources as a means to promote a special point of view and support a particular system. People also refer to their specific traditions of knowledge production in order to legitimise and render statements probable. This legitimisation process often includes an assessment and criticism of the opponents' traditions of knowledge production when the traditions are positioned and used politically.

Ideas for sustainability: Home Rule administration

The concern for beluga whales, and later the perception of a crisis situation in the end of the 1980s and the beginning of the 1990s are aspects of what Randall Reeves would call the 'alarm phase' in the development of a management regime (1992: 187f). During this phase, scientists, politicians as well as bureaucrats have relatively few means to handle and evaluate the situation. In 1990, the Home Rule Parliament discussed suggestions for hunting regulations. The proposals were rather weak (Sejersen 1998: 92f) and members of the Parliament stated that they needed more accurate biological research results and recommendation in order to take action.

It was the Home Rule government that was the first to take action. It produced an order to regulate beluga whaling in 1992 (Hjemmestyrets bekendtgørelse nr. 10 af 19. juni 1992 om fangst af hvid- og narhvaler), mainly because it had been informed that the JCCMNB soon would express concern about hunting levels. Although the order does not restrict hunting to any great extent (as such it can be described as a minimum order), 1992 was a turning point in the management of beluga whaling in the sense that the order introduces a formalised national management regime. The order also lays the ground for future beluga whaling regulations. Additionally it paved the way for discussions during the next phase in the development of a management regime: the 'challenge phase'. Reeves

(1992) argues that this phase is characterised by governmental interventions to restrict hunting on the one hand and hunters' complaints and resistance on the other hand. The 1992 order, which was the foundation for future regulation is scrutinised below.

The government in Nuuk made up an order addressing a series of issues to be found in many other Greenlandic orders:

- legal background for the order
- allocation of user-rights
- preservation strategies
- technological requirements and hunting methods
- feedback from hunters
- control of hunters
- dispensation
- market permissions
- sanctions

The order is structured in accordance with the administrative and legal tradition of the Home Rule. For managers, the management regimes must be political acceptable, administrative possible, founded in existing legislation, based on democratic hearing/negotiation processes and entail a feedback/control system and sanctions. Managers follow a blue print when drafting regulations in order to make them *administrative sustainable*. To put it differently: Managers must be sure that the regulations can be administratively sustained over time. There are certain rules which the administration must apply to; it cannot introduce new systems or tools if they have no basis in legislation, political decision making processes or in administrative practice. The administrative system has to reproduce itself over time. This emphasis on administrative continuity can entail that the management system does not correspond to local perceptions and ways of doing things - a situation which in the end can endanger the success of the regulation.

My focus on administrative sustainability does not involve that managers avoid considering what consequences a regulation may have on the resource and the users. On the contrary, the goal of managers is to manage people in such a way that their way of life, economy and resource-base are not eroded. I talk of administrative sustainability,

because the administrative system has to integrate an array of concerns which are not directly associated with the establishment of ecological sustainable use of a resource.

The administration refers to a special tradition when it draws up and legitimises regulations. I term it the *political/administrative tradition*. This tradition is solidly rooted in the system and its historical roots are understood to prove its worth. It includes a collection of concrete tools to be used in regulation (see e.g. Landstingslov nr. 15 af 6. november 1997 om fangst og jagt for a list of available tools), division of rights and competence from top to bottom in the system and, perhaps most importantly, it is build on democratic processes. The knowledge production of the administration is based on a mixture of expert consultations (primarily biologists and legal advisers - unlike in North America, social scientists are seldom consulted), hearings and negotiations with interest organisations (primarily the Association of Fishermen and Hunters in Greenland (KNAPK) and the Association of Municipalities in Greenland (KANUKOKA)) as well as on more or less formalised gathering of data (like the catch statistics). Lately, hearing processes among local associations of hunters and fishermen and seminars with broad representation of all parties have been used in the knowledge production process of the administration. Visits to local communities and telephone conversations with local hunters are also an integral part of the administrative tradition. Although the administration has an inclusive nature it can be characterised as centralistic. Decentralisation has not got much footing in Greenland, and some blame the roots in the colonial history for the continuation of the centralised structure and practice (Dahl 1986). Commenting on the centralised management structure in Greenland compared to the co-management regimes in Canada Ben Kovic, chairman of the Nunavut Wildlife Management Board notes that "In Greenland it kind of reminds me that we [Inuit in Nunavut] were in that situation 20 or 30 years ago" (Rideout 2001: 29). Among hunters one may encounter the perception, that the administration is too far away from the daily lives of hunters and fishermen, non responsive to local needs and that it is impossible to communicate with. Some even claim that the system and the people employed are Danish in nature and/or mind. Paradoxically some hunters perceive the administration as a colonial system although Greenland has had Home Rule since 1979.

The administration has to integrate many, and often opposite interests: the economic and socio-cultural life of hunters, biological advise, and external pressure (from JCCMNB,

NAMMCO or IWC to mention but three examples). Not only does the administration have to make sure that the final regulation has the expected effects, but also that the process of representation and negotiation is adequately pursued. During the negotiations of beluga whaling regulations in 1993-1995, the administration suggested an arsenal of different tools to reduce the hunting of beluga whales. Many of these tools would indeed satisfy the JCCMNB which recommended that the hunt should be reduced severely. However, the process of consultation and negotiation resulted in rather weak hunting regulations which have only had temporary effects on the hunting level. At other times, the Department has to take unpopular decisions and have often been criticised for doing so (see e.g. Jensen 1996; Grønlands Radioavis 1996).

The hierarchical structure of the political and administrative system integrates biologists as consultants. They are supposed to produce value free estimations and recommendations for actual hunting and fishing levels. The mandate of the biologists does not include recommendations for concrete management tools, although they are consulted on these matters informally from time to time. Biologists often trigger management discussions when they put forward their research results (see e.g. anon. 1995). Although biologists are not making the regulations they are often blamed for incompetence (see the description of perceptions in Atuagagdliutit/Grønlandsposten 1996) and unwanted interference into Greenlandic affairs (see e.g. anon. 1994). Biologists have indeed in many cases become the messengers of bad news and crisis prophesies in the eyes of hunters.

The political/administrative tradition guides the production of knowledge on local matters, tools for regulation and also on how to negotiate nationally and internationally. The practice of knowledge production and suggestions for regulations are integrate parts of a specific *nation building strategy*. The Home Rule administration has the whole of Greenland as its region of operation and is very reluctant to stimulate decentralisation. It introduces regulations serving *one* community - the imagined community of Greenland (Dahl 1997; Anderson 1983; Nuttall 2001). This process has been commented by Dahl:

> "The emerging of the national and imagined community goes hand in hand with an encroachment upon the small 'traditional' communities as being corporate and social entities. The imagined community develops traditions of its own

> which are being used for their own purposes without the involvement of the local communities or the knowledge and traditions - which nevertheless were the founding symbols of the imaginative communalism" (1997: 3)

The authorities are very reluctant to distribute exclusive local/regional rights to resources, because such a practice contests the idea of equality of hunters within *one nation*. "Rule and regulations in today's Greenland do generally not allow discrimination based on residency..." (Dahl 1997: 11). Thus local hunters and fishermen cannot exclude non-local resource users from using resources within a perceived local hunting/fishing territory. The Home Rule is also very reluctant to partially abolish the hunting rights of e.g. non-occupational hunters because such a step runs against the widespread idea that user rights belong to all Greenlandic hunters (as defined and categorized by the authorities). However, the non-occupational hunters are restricted severely in their access possibility and they often put forward statements which indicate that they feel these restrictions as a *de facto* attack on their user rights. They claim user rights on the basis of their position as members of the national community: they are good tax payers, Greenlandic citizens and they need to hunt in order to live out and sustain their Greenlandic national identity. For an analysis and discussion of national vs. local rights consult Dahl (1997, 2000) and Nuttall (2001).

Control is taken away from the local level and monopolised in the hands of the authorities bases in the national centre, Nuuk. In 1990, the centre expanded its control by implementing a system of wildlife officers, whose major task is to monitor that local hunters and fishermen obey to the national regulations. National or international imposed regulations often take away the right of local hunters to make autonomous decisions and freely to dispose of means and methods (Dahl 1997: 6). National regulations and the use of wildlife officers challenge and change the rules, authorities and decision making processes at the local level. The changes, which may be considered positive by some, have put some communities in periodical limbo where neither the national nor the local systems function in a satisfactory way.

When implementing regulations aimed at establishing ecological sustainable resource use the administration also considers and tries to realise legal, political and administrative sustainability and thus continuity. This kind of sustainability also entails the continuity of

the nation. According to Dahl (1997), this nation building process overshadows and in some cases replaces community control and rights with national control and decision making. It has furthermore created new administrative categories of resources users (occupational and non-occupational hunters) detached from local communities in order to embrace the Greenlandic population in total.

The Home Rule administration wants to be all-embracing and omnipotent in its regulations. As a democratic system it also wants to hear all members of the community. Due to the size and imagined nature of the Greenlandic nation, the administration becomes very dependent upon representation of and negotiations with interests groups. In this case the Association of Fishermen and Hunters in Greenland (KNAPK) is the most prominent. In order to be political effective, KNAPK has to reproduce the national agenda of the administration and the political system - an agenda which does not necessarily leave much room for particular community strategies. This is a paradox considering the diversity of needs, perspectives and problems of the members of KNAPK. The consultation and negotiation process is based on a hierarchical system of representatives and experts. That the system is hierarchical does however not mean that the power as such lies solely in the hands of these experts. KNAPK is consulted as representatives - biologists as experts.

Ideas for sustainability: Biologists

Biologists take up a central position in the management of resource use as the primary expert advisers to the administration. They pursue research on the request of the board of the Greenland Institute of Natural Resources (Grønlands Naturinstitut) - composed of representatives from the Home Rule, interest organisations and biologists (see Landstingslov om Grønlands Naturinstitut af 8. juni 1994). Of central importance in the production of knowledge is the concept of *stock* (Roepstorff 1998). Biologists gather information which can through light on the qualitative and quantitative status of a specific stock/population understood as a well defined and demarcated unit. On the basis of their assessments they advise Home Rule managers and international and bilateral institutions like the JCCMNB, IWC and NAMMCO on the carrying capacity of each stock/population. Of special interest to managers is to get advise on the size of a possible catch and the

subsequent growth rate of the stock/population. The biologists' suggestions for catch levels are primarily based on the idea that a stock/population can sustain the loss of a certain proportion of its members, that are continuously replaced, as long as the catch does not exceed the Maximum Sustainable Yield (MSY). Of fundamental importance for the biologists' concept of sustainability is the notion of *monitoring*. It is a general perception among biologists that a stock/population can be managed and secured when all the negative and positive impacts are monitored continuously.

The language and knowledge production of biologists have become an integrate part of most modern management institutions. Biologists from Greenland participate as representatives for the Home Rule in several scientific working groups and committees which deal with resources relevant for Greenland. The production of biological knowledge is a substantial contribution to the position of the Home Rule in international institutions as well as its success when negotiating resource allocation (see e.g. Grønlands Naturinstitut 1997: 16f). In 2002, at the meeting of the International Whaling Commission in Japan, the Home Rule representative was, for example, put in a situation of predicament when the Home Rule was only able to put forward old whale research. In the wake of the meeting, pressure was put on the responsible minister from many sides in the Greenlandic society and he was urged to prioritise new whale research in order not to loose the whale quotas.

Furthermore, up to date and solid research supports an image of Greenland as a legitimate manager of its own resources; it has the experts to make the necessary research, surveys, assessments and advise. In this respect the biologists make up an important brick in the nation building process.

Biologists are preoccupied with ecological sustainability as well as with the sustainability and continuity of the scientific tradition. In most cases ecological sustainability implies that the existence and quality of stocks/populations and their surroundings are secured. Very often biologists are ascribed the monopoly to define sustainability. In order to produce credibility and answers they follow a well defined scientific tradition which outlines methods and possible interpretations. The value of the advise is legitimised by referring to this *scientific tradition*. This tradition stresses continuity and integrity in the gathering of data - a continuity which is of paramount importance when making

comparisons and population projections - the very basis of advise for sustainability. However, conservative research methods and models may at times be in conflict with observations. This is a dilemma that biologists work a great deal with to overcome. A Greenlandic biologist comments the continuity in the collection of data in the following way:

> We fly in March. The reason why it takes place in this period is due to previous countings conducted in this month. Therefore, we have something to compare with. I am not sure whether or not it is a good time of the year to conduct the counts. Some hunters argue that the beluga whales are under the ice. This is not unthinkable. More and more indicate that beluga whales can be in close pack ice which makes them difficult to count.

When practising science in the correct way as prescribed by the tradition the results are thought to be detached from political, economic and cultural interests - an integrity biologists want to protect (Kapel 1998: 25). The research and advise are perceived to be *value free*. However, due to the prominent position of biologists in the management regime, hunters have started to question this claim. They criticise research methods and have requested to participate in the collection of data. Today, hunters for example participate in the counting of caribou from the air. In practice this can not be understood as an active contribution of hunters' knowledge to research and management but moreover as a challenge to the biologists' delicate separation of interests and science as well as a critique of their ability to read the landscape. This critical separation is commented in the following way by a marine mammal biologist:

> It is hardly possible to avoid that biologists produce their own opinions and they should be allowed to do so. But it is crucial that one is conscious about the separation of facts and prejudices when giving advise. Business is one thing and philanthropy another! To be able to do so both expertise and experience are required. It is important to aim at the existence of both at the Greenland Institute for Natural Resources - and that the institute is allowed to protect its

> scientific integrity from outside interference and dictates from those who promote narrow interests, perspectives and prejudices (Kapel 1998: 25; my translation)

Ecological sustainability is about establishing long-term quality ecosystems and animal populations - often on quantitative conclusions (Grønlands Naturinstitut 1997: 10). This endeavour is dependent upon reliable and continuous monitoring, research surveys, surveillance, stock/population predictions, the improvements of models etc. (the paramount reason to have Greenland Institute of Natural Resources) - tasks which must be solidly based in the scientific tradition. This idea of ecological sustainability depends on the sustainability (quality, applicability, integrity and continuity) of models and the scientific enterprise itself.

If ecological sustainability is to be a viable pursuit it must, according to biologists, include the biologists and their research and assessment activities. The achievement of ecological sustainability is a process which is dependent upon strict measurement of the natural world - an aspect which is intrinsically linked to the sustainability concept promoted by biologists.

Feedback from users in the form of catch reports, meat and tooth samples from hunted whales and seals etc. are used to monitor resource use and to estimate age, sex, identity and reproduction rates of each stock/population. Although these data are produced with the help of local hunters, it does not mean that the hunters' perspectives and knowledge traditions have been integrated. In Greenland, biologists have a long tradition of consulting local hunters when visiting communities during their research trips. The question is whether the hunters can provide them with the information they are looking for. The tradition of biological research outlines a list of factors which are crucial to make accurate population assessments:

- stock identity
- net recruitment rate
- carrying capacity
- maximum sustainable yield level
- age of first pregnancy
- pregnancy rate

- mean calving interval
- diving frequency
- natural mortality rate.

All these factors have to be integrated into complex models. Speaking about models and the natural mortality rate for beluga whales, a biologist critically notes:

> We know very little about the natural mortality rate. We know they [beluga whales] get 12 per cent calves each year and that hunters can take 4 per cent. This means that we accept a mortality rate of 8 per cent. The composition of the hunt is different between areas. It may be the case that there is a high mortality due to undiscovered ice entrapments. Maybe the mortality appears in leaps. The annual recruitment and annual mortality may be far bigger than expected but it is not taken into account because it does not fit into our models.

As will be indicated in the chapter 'Developing new interfaces' there is a great difference between biologists and hunters in what should be looked for and how observations should be interpreted.

In the following I will look more closely at the hunters' ideas for sustainability and how they are reflected in the regulations.

Ideas for sustainability: Hunters

Greenlandic hunters use a variety of resources in order to sustain their households and their way of life. Birds, seals, whales, fish, caribou and musk oxen to mention but a few resources. To be successful, a hunter has to have the necessary technology, have a detailed knowledge about animal behaviour and surroundings and have flexible resource use strategies. Luck, skill and experience are factors which are underlined over and over again by hunters when talking about hunter qualifications. The presence of animals is of course an important factor as well. These factors all improve the *accessibility* - the most important thing to make hunting a viable way of life. And when one has access to the resources (if all the factors are put together), hunting contributes to sustain the household in terms of meat and often also in terms of money. The household's economic, social and

cultural continuity and integrity are closely linked to the accessibility of resources. Some of the factors determining accessibility can be manipulated, others can not. Animal presence, ice conditions, sea currents, wind etc are examples of the latter. To improve the accessibility hunters are preoccupied with even minor technological improvements, investment in time and work, expansion of the hunting area, and the production of knowledge. Put successfully together they can improve the outcome of the hunting activities as well as underpin and sustain the household - socially and economically.

In some incidents the accessibility is eroded due to others' activities. Trawlers fishing shrimp day and night outside Sisimiut have scared the beluga whales away from the fiords and coast where they used to feed. Consequently, beluga whaling from small skiffs has become a less reliable hunting activity close to Sisimiut, the skiff hunters argue. To improve the accessibility, skiff hunters urged the municipality to ban shrimp trawling outside Sisimiut during the night - they thought this would give the beluga whales a chance to feed close to land without disturbances. The proposal would also increase the possibilities for skiff hunters to encounter beluga whales close to land. The proposal was turned down by the municipality council.

Faced with political initiatives whose main aim is to limit hunting activities and reduce the catch through regulations, hunters fear for the accessibility. The political initiatives are often legitimised on the basis of biological research indicating ecological unsustainable levels of hunting. Although hunters often disagree with the research conclusions and the advise of biologists they are forced to respond constructively to the proposals. In order to cut down the catch and thus work towards what the biologists perceive as sustainability, hunters often propose access limitations for certain groups of hunters within the hunter community. The question becomes one of reducing and restricting accessibility for certain users. Thus one can say that the hunters' strategies for sustainability is intimately linked to the socio-economic sphere.

Several tools to implement socio-economic sustainability are suggested by hunters:

- Hunters from households which are sustained by meat and cash stemming from small-scale hunting activities should have the best access possibilities.

- The market should be closed for certain user groups in order to strengthen the cash production of hunters and to discourage people from hunting as a means to produce cash.

- Certain hunting methods could be limited

The socio-economic aspects of sustainability have increasingly been reflected in the elaboration of government orders concerning beluga whaling - and the ideas of the hunters have thus to a certain extent been integrated in management. The first order (Hjemmestyrets bekendtgørelse nr. 10 af 19. juni 1992 om fangst af hvid- og narhvaler), which was introduced in 1992 used socio-economic criteria in three paragraphs: §1 allowed everyone living permanently in Greenland to go beluga whaling (although the order did not explicitly note it, only hunters with valid occupational and non-occupational hunting licences were allowed to go beluga whaling). §2 allowed local hunters from certain municipalities to pursue whaling despite a general hunting ban in three areas; §6 stating that as many communities as possible should benefit from an ice-entrapment of whales (sassat). Seen from a socio-economic point of view it was indeed inclusive, in the sense that none were left out.

One year later, in 1993, the order was renewed (Hjemmestyrets bekendtgørelse nr. 21 af 29 juli 1993 om fangst af hvid- og narhvaler) because JCCMNB urged Greenland to reduce the catch severely. §1 now explicitly stated that beluga whaling solely could be pursued by hunters with a hunting licence. §2 and §6 were maintained. In §5 the new order divided access- and disposition rights to three socio-economic categories:

1. hunters using vessels smaller than 25 GRT (Gross Register Tonnage)
2. hunters using vessels between 25 GRT and 50 GRT
3. hunters using vessels bigger than 50 GRT

By doing so, the hunter community was split into three sub-communities which were allocated different rights. The smallest vessels were allowed to catch and sell beluga whales. The next category was allowed to hunt beluga whales but only for household consumption. The last socio-economic category could hunt two beluga whales per boat per trip and only as supplies.

Two years later, in 1995, the order was strengthened (Hjemmestyrets bekendtgørelse nr. 30 af 11. oktober 1995 om fangst af hvid- og narhvaler). Although occupational hunters wanted to have exclusive user rights to beluga whales at the expense of non-occupational hunters, whom they claim belong to a socio-economic group not in need to earn a living from whaling, common user right was maintained in §1. §2 and the paragraph on sassat were maintained as well.

However, the major addition to the whaling regulation was the banning of drive and encirclement whaling which indeed was a very controversial step. This initiative, which was supported by many hunters from areas not using this technique, interfered deeply into the hunting communities located in Upernavik and in the area of the Vaigat Channel. Although it has a technical nature (banning a specific hunting method) its consequences are extremely regional, thus affecting a specific socio-economic group (Sejersen 2001).

The three socio-economic categories were maintained with the exception that the biggest category was further divided into two:

- hunters using vessels between 50 GRT and 79,9 GRT
- hunters using vessels bigger than 79,9 GRT

The latter category is not allowed to go beluga whaling at all, while the former maintain the whale quota stipulated in the 1993 order.

Although the four categories are fleshed out using vessel size as the determining criteria it is not based on technical considerations - i.e. that it is better to hunt from a small vessel than a big one. The vessel sizes coincide with socio-economic categories. This background became apparent in 1996, when the Home Rule introduced an addition to the 1995 order (Hjemmestyrets bekendtgørelse nr. 6 af 29 februar 1996 om ændring af bekendtgørelse nr. 30 af 11. oktober 1995 om fangst af hvid- og narhvaler). It banned the use of bigger vessels as mother ships for skiffs - a practice which was known to take place. When bringing as skiff along, crew members on bigger vessels could 'change' vessel size during whaling and thus be allowed to hunt and sell without restrictions. The new addition renders the socio-economic categories - written in technical terms - visible.

Despite requests from both JCCMNB and NAMMCO and the introduction of a series of whaling regulations, the Home Rule has not been able to reduce the catch of beluga whales (se table).

Catch of small whales by numbers 1993-1998

	Greenland total	Beluga	Narwhal	Porpoise	Pilot
1993	2.980	629	633	1.718	-
1994	3.138	527	877	1.734	-
1995	2.622	666	537	1.418	1
1996	3.139	521	727	1.824	67
1997	3.162	568	794	1.592	208
1998	3.981	686	814	2.116	365

Direktoratet for Erhverv (http://dk.nanoq.gl/tema.asp?page=tema&objno=4523).

Local strategies for sustainability are pursued on the basis of socio-economic differentiation and allocation of rights - a process which has resulted in much conflict and dissatisfaction locally. A prominent example of socio-economic differentiation as a tool to reach socio-economic sustainability is the changes taking place in the division of beluga whales. Occasionally, both trawlers, skiff-hunters and non-occupational hunters have taken part in the same beluga whale hunt. At the flensing scene each vessel - large and small - claims a hunting share. Until lately, the division of hunting shares has been determined on the following scale: one share to each boat independently of size and number of persons on board. In 1994, a system of division was introduced in Sisimiut which favoured occupational hunters only leaving half a share or even less to non-occupational hunters unless the latter sights the whales first (for an elaboration of this system of division see Sejersen 1998, 2001).

The introduction of systems based on socio-economic differentiation within the hunter community is a painful process but it places the creation of sustainability in the hands of the local community in the sense that the socio-economic tool itself is agreed upon. People can relate to the concept and questions of socio-economic fairness although they disagree quite a lot.

Small-scale occupational hunters often suggest that non-occupational hunters and crew on large-scale fishing vessels have to "pay the price" and give up resource rights *if* the catch level has to be reduced.

> If they are going to make beluga whale quotas it would be best if only hunters were allowed to shoot them. People with money can buy the meat at the open air meat market anyway. They are paid every second week, the hunters are not...it is more just if the hunters are allowed to go hunting...It is in the very name: *hunters* - they are the ones who go hunting...The hunters are obviously quite dissatisfied [with the present practice which implies that they have to share the catch with non-occupational hunters and fishermen on trawlers]. Hunters have to sell half of their catch to be able to afford petrol, food and ammunition. Those who are not hunters just keep all the mattak and the meat and are able to skip buying meat at the open air meat market. That's unfair.

The question of fairness is central to the arguments put forward by small-scale hunters. They often argue that the distribution of rights among hunters in the local and national community has to take the socio-economic continuity of small-scale hunters' households into account. A hunter even claimed that an equitable management system underpinning socio-economic sustainability would lead to ecological sustainability: "If beluga whaling was pursued by hunters solely, the Home Rule would have nothing to fear, because then fewer would be caught."

Hunters from other hunter categories challenge the definition of fair distribution of rights. They are also occupied with the establishment of what they understand to be an equitable management system. Their interests and position in society have to be acknowledged as well, they argue. Non-occupational hunters often put forward statements such as "We are good tax payers", "The resources belong to all Greenlanders" and "We have always hunted - it is part of our identity". While many small-scale hunters and fishermen favour a management system which underpins what they perceive as socio-economic sustainability, non-occupational hunters focus on cultural sustainability. Hunting sustains their cultural identity - without this activity they would lose their identity as Greenlanders and a large part of themselves, they claim.

For hunters, sustainability is about creating equitable management systems, which sustains the socio-economic and cultural life in Greenland. The establishment of sustainability becomes a social process where access rights are distributed within the hunter community. The hunter community in general is divided into several sub-communities each allocated user, access and disposition rights. Locally, this can be a very painful process, socially speaking. Some hunters lose rights which they have taken for granted and considered inherited. It becomes imperative in this social demarcation process to legitimise ones inclusion into a specific hunter community and its promotion of sustainability. Hunters legitimise their rights by referring to an embeddedness of their activities, knowledge production and livelihood in a *hunting tradition*. Although they pinpoint different aspects of this tradition they all claim to belong to the community which lives out the hunting tradition and survives on it.

It is also with reference to their belonging to this hunting tradition that hunters criticise biologists. And it is exactly by belonging to the tradition and its associated practices that they point out their knowledge about animals and nature as valid and more in tune with reality than the knowledge of biologists. Hunters' suggestions and criticism are understood as based on experiences solidly anchored in a tradition which has proven its own continuity and applicability. Seen from the hunters' point of view, this tradition elevates hunters from a position as cultural and economic biased opponents to experts in the management discussions. Commenting on the current management of caribou hunting, a non-occupational hunters stated that the authorities rather ought to listen to the persons who know the animals - the experts - instead of relying on biologists who make guess work on the basis of theoretical ideas (anon. 1998). The argument is based on the idea that hunters really know the animals because hunting is perceived as an activity which for generations has been inextricably bound to the land and the animals - unlike biologists who recently have started to fly over the landscape and make hypothetical assessments behind their desks in Nuuk. The two traditions (scientific and hunting) support and are based on different ways of being involved in the world. And it is exactly these different kinds of involvement that scientists and hunters refer to when legitimising their own assessments and criticising the other. Biologists, for example, argue that the hunters often lack the spacious view of biologists. Without this view, hunters' estimations of populations are pure guesswork on the basis of very limited and local observations, biologists claim. The two traditions are used within a management context to legitimise

and challenge political positions when negotiating regulations. This political aspect and its dynamics has been dealt with in Sejersen (1997).

The elasticity of sustainability

Sustainability is indeed a very elastic concept. Its global connotation and acceptance has not added any transparency to the concept. When focusing on the context(s) in which the concept receives its meaning(s) several traditions emerge. It is on the basis of these traditions that the concept takes it shape, claim relevance and truth. In Greenland, the discussion of how to manage beluga whaling reveals three traditions and three concepts of sustainability.

Administrators work within an administrative, political and legal tradition with historical roots in a representative democracy based on a Scandinavian model. This tradition furnishes the administrators with tools, obligations, rules and ways of producing knowledge which underpin the continuation and integrity of the administrative tradition and the nation. The tradition resembles other states that Greenland interact with. When following these rules, Greenland successfully pursues management strategies of a modern state - a fact that strengthens Greenland's nation building process and negotiation possibilities internationally. The management of *national* resources legitimises national control at the expense of local users' power.

Biologists refer to the scientific tradition on which their knowledge production is based historically. Sustainability is ecological equilibrium - ecological continuity and integrity. According to this tradition, sustainability can be obtained and maintained if one pursues scientific measurement of the negative and positive influences on a specific stock/population. The concept of stock/population constitutes a kind of natural capital which can be managed, mechanically speaking, in order to sustain the capital. Thus, an indispensable part of ecological sustainability is the continuation and integrity of the scientific measurement enterprise.

Hunters pursue hunting on an everyday basis in order to sustain their households. The long tradition of hunting in Greenland and the daily interaction with nature and animals

give hunters reason to believe that they posses knowledge which has proven its worth and sustainability over time. Biologists are often criticised by hunters for not having a similar well-founded basis for understanding the Greenlandic landscape. Sustainability for the hunters means socio-economic continuity of the households (sustainable livelihoods) and suggested management tools often emphasise socio-economic differentiation of the hunter community into sub-communities. The demonstration, demarcation and representation of each of these communities are crucial in order to stake credible claims and to get access to resources.

All three parties refer to specific traditions as the basis of their claims and tools for sustainability. These traditions are referred to because they represent *continuity*, *autonomy* and *integrity*. Thus political opponents and criticism may be perceived as intrusion, interference and erosion of the tradition and the practices of a specific community. It is a perception which makes people fight even more fiercely to defend the integrity of their traditions and practices.

Back to the question which was raised in the beginning: Is hunting of beluga whales in Greenland sustainable? It is tempting to go to the biologists to get an exact answer. But as we have seen sustainability has multiple agendas attached. It is very unlikely that we get a affirmative answer from all the involved parties - each with their agenda.

Today the management of beluga whaling is strengthened to respond to the biologists' recommendations but the administrative tradition is a safeguard against the dominance of a single agenda. The order addition in 1996 is an excellent example. The administration uses technological criteria (administrative tool) to divide access rights between certain social groups (hunters' tool) in order to reduce the catch of beluga whales (biologists' tool).

While some hunters complain that the regulations undermine their households and cultural identity, beluga whaling is still possible to a large extent. Although the administration is centralised it has responded positively to some of the ideas put forward by certain groups within the hunter community.

The next stage in a management system after the initial alarm period would be the 'transition phase' – according to Reeves model (1992: 186) - where intensive research is accompanied by the creation of new management institutions. In Greenland, the management of whaling is pursued by a well-established centralised institution on the basis of negotiations between parties. It is very difficult to change this political and administrative tradition although changes could base new institutions more solidly in the whaling communities with the effect that responsibility, ideas and visions would be shared by the whalers as well. The top-down management structure leaves little room for local knowledge and local commitment. The legitimacy of the Home Rule authorities and its strategies for sustainability will indeed be tested in the near future when the existing whaling regulations have to be enhanced at the suggestion of JCCMNB and NAMMCO.

Developing new interfaces

Local people pursuing daily tasks have quite often been categorised as non-experts (they are only considered experts when it comes to guiding in local environments) and their skills and knowledge have been ignored within the structures of the emerging states in the Arctic. Paradoxically, the initial phase of colonisation in the Arctic was based on the use of local peoples and their knowledge as hunters, trappers, fishermen and whalers. During later phases, the success of colonisation and the expansion of state control were thought to be proportionate to the degree of cultural assimilation of local and indigenous peoples. Boarding-schools, forced migration, establishment of missions, proletarization etc. were tools to speed up the process of assimilation. The indigenous peoples of the Arctic were to become civilised citizens of the new states. Today, many North American Natives consider this a hard blow on their traditions, their cultural integrity, and way of life in general. State control and administration have changed many of the indigenous peoples' daily tasks, routines and forms of organisation. It is very often asserted that the communication between generations has suffered and that the young generations have become alienated from the environment. Possibilities for transmission of local knowledge to new generations of Native peoples are considered to be declining with serious consequences for the maintenance of cultural traditions.

Since the 1960s, local knowledge has been an integrated part of most discussions about resource monitoring and management in Canada and Alaska. Among other things, the increasing political mobilisation of indigenous peoples and the land claims processes are

reasons for the demand of more local involvement. A similar process emphasising devolution can be registered in the Third World countries.

A quite recent trend can be registered in Greenland where hunters increasingly demand to have their knowledge of the resources respected and integrated into biological research and management. Although it is beyond the scope of this chapter to elaborate on the reasons for this, a few possible reasons can be outlined here. Today, hunters are faced with alarming scientific reports about the state of their resources. These assessments are the backbone of the Home Rule's regulation of hunting activities which are becoming more and more restrictive. Thus, one can expect the hunters to react as a means to protect their livelihood from further restrictions. This political utilitarian perspective is however only one aspect of the conflict. Hunters simply disagree with the assessments because they can not find a correlation between their observations and the scientific results. And even though they might agree with biologists about the decline in number of observed animals they may not necessarily interpret it as a decline in the animal population in question.

Another reason for the "delay" in the knowledge debate is that the history of political structures in Greenland has made it possible for hunters and their organisation KNAPK to influence policy making to a great extent. Although the Danish government historically has implemented restrictions, which it has been criticised for - e.g. whaling quotas and rules of distributing the quota (Sejersen 1998) - hunting as an occupation and as a way of life has been accepted and stimulated. Misunderstandings, conflicts and discussions between Danish and Greenlanders have never reached the point of confrontation as between Natives and whites in North America as exemplified in the land claims negotiations where for example the industry, sport organisations, wilderness organisations etc. were and still are powerful stakeholders. These organisations were eager to solve the Native land claims but the solution should not hinder their interests. In Alaska, the discussion of Indian Country and retribalisation (Morehouse 1989, Berger 1986) has stranded as these organisations perceive these initiatives to give too much self-determination to Natives at the expense of individual freedom and possibilities of Alaska citizens among other things. During the claims processes, Natives have legitimised, demarcated and documented their claims by using cultural arguments - of which local knowledge is a substantial component. The claims on TEK proves useful as a political tool to gain influence in decision making processes. TEK

has been considered a legitimate way to claim more control as Native self-determination has been very controversial and not solved satisfactory seen from many Natives' point of view.

The demand for the integration of local knowledge in scientific assessment and management in Greenland has been met positively both within the scientific and the political community. This acceptance does not, however, make it easier to pursue the activities and interpretations related to the actual process of integrating local knowledge. This chapter will highlight some of the advantages and problems which can be encountered in the new interfaces between hunters and biologists. I will use a simple model (put forward by Kalland 1994) as an analytical frame to compare scientific and local knowledge on an equal level. The model dissects knowledge into three levels: the empirical level, the paradigmatic level and the institutional level. This model is also used to make reflections over the question: What precisely do we mean when we talk about the integration of local knowledge in scientific research? The new interface is a challenging sphere where all participants (including hunters) are forced to reflect on their ways of producing and communicating knowledge in order to make it successful.

Creating an interface between scientific and local knowledge

Very often local knowledge and scientific knowledge are considered as two different and well-defined units. These units are considered different in many respects. Local knowledge is understood to be based on observations taking place during the pursuit of daily tasks. The observations are loosely organised according to subjective, religious or ideological points of references. The common perception is that local knowledge is transmitted through oral means and through practical experiences. Pálsson (1994), for example, talks about enskillment at sea, and emphasising the process of 'learning by doing'. Very often a traditional component is associated with indigenous peoples' local knowledge; thus stressing the depth of time that these observations have taken place. Continuous interaction with the environment (normally on a daily basis) over a historical long period are aspects of local knowledge which are used to legitimise the truth-value of the claims of local hunters and fishermen. The need to legitimise one's knowledge production has increased as scientists are challenging it explicitly or implicitly.

Scientific knowledge is often positioned as a contrast to local knowledge as it is perceived to be based on well ordered observations which are organised according to strict methodological and theoretical requirements and directed by hypothesis testing. The common perception is that scientific knowledge is transmitted through scientific publications. This written component is also part of its historicity which is pointed out to stress the time-span on which the scientific enterprise is build. The scientific tradition is used to legitimise the truth-value of claims of scientists. The need for scientists to legitimise their methods and knowledge production has increased as local people are challenging it.

Seen from the local users' point of view it can be very frustrating and degrading that scientists coming from outside the local social, cultural and natural environment are telling them about the state of resources on the basis of methods and ideas detached from their daily practices and observations. A similar frustration can be encountered among scientists when their thorough work is devalued on the basis of what they consider loose observations, economic interests and religious beliefs (see e.g. controversy between Howard & Widdowson (1997) and Bourque et al. (1997)).

Local knowledge and scientific knowledge comprise two different *knowledge forms*. Furthermore, they comprise two *socio-cultural* units. Different knowledge forms implies differences in knowledge traditions, production and worldview. Stating that these knowledge forms comprise to different social-cultural units implies that knowledge production, communication and evaluation take place between persons situated in specific socio-cultural settings. This difference may imply that one should not only concentrate on how to integrate local knowledge as a distinct knowledge form into research but also look into ways of integrating local people.

These purely analytical constructions help to focus on the following inelegant question: *How* is *what* kind of knowledge exchanged/communicated to and by *whom*? This question is important to consider when talking about the new interfaces between biologists and hunters.

The model

According to Kalland (1994) local knowledge can be divided into three levels: the empirical level, the paradigmatic level and the institutional level. The model is a good and equal starting point when scientific and local knowledge have to be compared. If Western science is to be used as the analytical point of departure to judge local knowledge the analysis will already be biased (Scott 1996).

Where the empirical level is the level of observation and practice, the paradigmatic level is the level of interpretation and organisation of observations; it is the level where the empirical observations are put in a larger context (i.e. paradigm, cosmology), so to speak. Finally, the institutional level refers to knowledge embedded in social institutions. It is the level of action. It contains knowledge about institutions and about distribution of knowledge, rights and responsibilities within these institutions (Dahl 1998 has made an excellent analysis of this level concerning beluga whaling in Greenland). A similar tripartition is used by Gunn et al. (1988). The model is used in this chapter to compare and explore possibilities at the interface between biologists and hunters on each level.

Interfaces at the level of observation

This is probably the most easy level to produce an interface and a mutual exchange of knowledge. Biologists have always made consultations with Greenlandic hunters and have been informed about observations, sites of hunting and changes in the environment. In 1998 and 1999, for example, Heide-Jørgensen asked hunters in Upernavik to direct and assist him to places where they thought beluga whales could be observed. These observations were important to evaluate the research methods and demarcation of research areas. Historically, local observations have been essential for the success of biological research.

In some cases consultation is expanded to co-operation. It has become more common that hunters are working together with biologists on fieldtrips, where hunters are observing and counting animals together with biologists. One example is caribou counting from air. At these occasions biologists and hunters are brought together socially through

a common pursuit (e.g. counting) and this social interface can potentially stimulate further understanding. However, this interface has been criticised by some hunters as the biologists determine the methodology and the research priorities.

The fact that the elaboration of the research design lies in the hands of the biologists has made hunters criticise the value of the observations - not the data collected necessarily. In Greenland, hunters and fishermen often criticise biologists for observing/test fishing at the wrong places at the wrong time of the year and with the wrong equipment. The scientific methodology using prefixed index areas and periods in order to make comparisons possible is often difficult for hunters and fishermen to appreciate. For hunters actual seeing, encountering and catching animals are success parameters. For biologists comparability and viability of survey methodology are success parameters. Seeing animals or catching fish is not the primary goal of biologists. There is thus a substantial difference in what *seeing* or *observing* implies. In some instances hunters have also questioned the viability of surveys pursued from air. Air surveys can be viewed as detached from the context – symbolically and practically. To contextualise seeing – or perhaps more correctly, to change the context – hunters in Canada have requested that caribou and muskoxen surveys should be ground-based as well (Gunn et al. 1988: 28). The point from which seeing takes place constitutes a problem for discussion at the empirical level. Increasingly, new methods for seeing are used by biologists: satellite and genetic analysis. These methods represent new challenges as they are further removed from daily experience. It does however not imply that hunters reject them – the data gained from satellite are in many cases received positively and may be looked at in the same way one looks at tracks in the snow from individual animals moving around in the landscape.

Other hunters are pleased about this co-operation between hunters and biologists when it comes to counting as they consider hunters better and more reliable observers because they believe that their daily routine of observations improve the sight and the skills of observing.

Hunters may also contribute to research with what can be termed non-direct-observations. Hunters may, for example, be requested to furnish biologists with hunting reports or they may supporting a specific research project by providing biologists with samples (meat, teeth etc.). This kind of non-direct-observation, if organised correctly, is

very useful for biologists and the feedback to hunters can be rather interesting for the hunters themselves. A similar kind of observation and positive feedback is practised when hunters send in animal tags and the biologist respond by supplying all data available about the specific tagged animal.

The interface on the empirical level is a social one as well - hunters and biologists have to interact. Language and communication problems in general are obvious in some cases, and may lead to great confusion. Although much energy may be channelled into solving such problems another, and perhaps more pressing, problem is in the forefront: How are the observers chosen? In Greenland, it is a general practice that the hunters and fishermen's organisations KNAPK and KNAPP are asked to point out proper persons for such tasks. This is a political and practical arrangement. But on what basis is the person chosen? Working with and for biologists can not be detached from the general political and controversial management context, and it can be assumed that the chosen person is looked upon by both biologists and the other hunters as a representative. The question is whether the chosen person considers himself a representative and if so what that implies.

When choosing a person to send to meetings for example, the local organisations may look at hunting skills, social skills as well as political skills. In some cases there are local hunters who may actually be more interested in or competent for the specific task than the chosen person, but they may lack the social and political resonance of what is expected of a proper spokesperson. A similar problem is encountered when biologists have group/community meetings with local hunters. After a meeting, which initially seemed successful according to the number of persons contributing to the discussion, “silent” hunters may come up to the biologists to elaborate or even disagree with statements put forward during the discussion. This difficult problem is associated with yet another. If people locally disagree, which is normally the case, whose knowledge should be integrated? And who is to make the choice?

The social interface between biologists and hunters is also an interface where social, observational and language competence are developed. This is an argument for social continuity (e.g. that the same biologist returns to the same community) – a requirement which may neither be possible nor acceptable seen from the level of community or the biologists.

Observations and the position from which to observe may indeed be discussed. Additional, a problem arises out of the question of what to observe. In some cases what some hunters are looking for does not carry any significance for the biologists. A hunter was, for example, worried about the increase of what he termed flees in the skin of beluga whales as an indication of their general state of health, while biologists, when asked about flees did not see them as an issue. However, in some cases the hunters observations can influence the research. Hunters have, for example, put forward observations of beluga whales which among other characteristics have bigger teeth than the ones they normally encounter. They interpret this observation as an indication of the existence of a different kind of beluga whale. On the basis of DNA samples, biologists are now mapping out the genetic foundations of each stock of beluga whales – research which indicates that separate beluga stocks may exist. But a correspondence between differences in teeth and DNA can not be made on the basis of the present data (Rydahl and Heide-Jørgensen 2001: 22-23). Hunters are keen observers and like everyone else working with and in the environment they make interpretations of their observations. The question of organising observations brings us to the next level, the paradigmatic level.

Interfaces at the paradigmatic level

At this level the observations are organised, interpreted and put in a larger context. It is at this level that conflicting views and difficulties often arise. Even though, the hunters and the biologists agree on the specific nature of an observation, they may be highly in disagreement concerning how to interpret it. Nadasdy (1999) gives an example on differences in interpretation from Canada, where biologists and hunters agreed on the number of counted dall sheep and the organisation of observations in juvenile, female and male. Where the hunters were worried about the low number of animals compared to other years, the biologists discarded the counting as the sample size was too small to be statistically valid (p. 9).

In Greenland, hunters interpret their observations of large numbers of caribou as an indicator of a healthy population. Though acknowledging the specific observation, biologists often turn down such interpretations as unsupported speculation. At most, the

hunters' observation may indicate local abundance, the biologists claim. According to the scientific requirements, relative changes in population size have to be determined on the basis of observations organised in accordance with fixed methodologies. The use-value of observations for a biologist is very dependent on the methods used to gather them. When biologists observe caribou from the air, their observations can be used to evaluate the population, while the hunters' observations can only be used to evaluate the presence of caribou. The devaluation of the hunters' interpretations can be understood as a devaluation of the hunters observational or interpretative skills – in reality a devaluation of the hunter and his experience (Sejersen 1998: 191ff).

Disagreements about how to interpret observations often end in conflicts which seem increasingly unresolvable as the involved parties tend to talk at cross-purposes. In Canada, for example, some researchers have accused the state's preoccupation with the integration of local knowledge as a waste of time and money as local knowledge is based in a religious paradigm, where the requirements for proof and methods are nearly non-existent. Seen from this point of view, the interpretation of observation becomes a religious endeavour (Howard & Widdowson 1997) with no scientific use-value. Opponents argue that the religious component should not come as a surprise (Bourque et al. 1997).

In Greenland, the focus of conflicts at the paradigmatic level is not based on religion. Here, hunters are accused of interpretations which only favours their economic aspirations. As these seem to be expanding, biologists often fear that hunters exaggerate or interpret their observations in such a way that a constant quota can be maintained or even increased. Consequently, hunters are accused of being driven by subjective and economic interests when making interpretations. Hunters often accuse biologists for interpretations detached from reality and driven by narrow scientific rules and interests. If the conflict is understood - as some do - as a clash between subjective economic interests and objective scientific interests it is locked at a level where the paradigms used to interpret the observations are distorted and ignored. In the following I will argue that the hunters and the biologists relate their animal observations to quite different frames of references: Where biologists are preoccupied with understanding the stock/population, the hunters are preoccupied with understanding the accessibility. Finally, explanations and reasons for changes and continuity are found at the paradigmatic level. As such this level constitutes a very decisive one.

The concepts of stock and population refer to, at least on paper, a clearly demarcation of separate animal groups with little or no overlapping. The concepts have become increasingly appropriated by the political community and much research is directed to furnish the managers with population assessments. On the basis of strict replicable scientific methodologies, observations of single animals are turned into indexes for the population, for the most part. Biological research in Greenland is primarily linked to management needs of the Home Rule. A consequence of this is that most research is directed to the assessments of stock/population sizes. Although one seldom does and cannot see a particular population or stock, a special overview perspective (the strong gaze) allows the biologists to convert concrete observations into what is considered formalised objective data. These are again converted into stock/population assessments upon which managers respond. A decrease in the sightings of caribou or beluga whales, for example, seen from the strong gaze point of view, can be interpreted as a decrease in the population. Seen from the hunters' point of view such a decline in the rate of observation may be interpreted entirely differently. Additionally, the biologists' transformation of observation into data is contested as well.

Put very simply, a decrease in sightings by hunters indicates that the animals are not present. And if they are not here they must be somewhere else. The possible presence of game is a common theme for discussion among hunters. They often refer to qualitative aspects which could have influenced the presence of the animals: Wind, ice, temperature, prey availability, noise, smell, skiff traffic, trawler activity, and hunting. While the five latter factors are caused by humans the first four are outside the control of humans (except the availability of prey which humans may have some degree of influence on). Often when hunters talk about animal presence, they do not indicate that these factors influence a population as such. Rather, these factors influence the presence and availability of animals. Skiff hunters, for example, often claim that intensive beluga hunting from trawlers in the ice outside the action radius of skiff hunters frighten the whales further at sea, and thus away from the skiff hunters. Observations interpreted within this framework of presence and availability, can be seen elsewhere.

An example is the scientific monitoring of beluga whales in the selected index-area off the coast of West Greenland which has resulted in alarming population estimations. Beluga

hunters find a few days of scientific counting from plane inadequate because it does not really appreciate the complex behaviour of beluga whales as the hunters see them. The success of beluga hunters stems among other things from their detailed understanding of many factors influencing the presence and movements of beluga whales. Local trawling activities, wind direction, time of the day, tide, presence of fish, ice conditions and hunting intensity are but a few factors which are continuously taken into account and discussed. Additionally, hunters eagerly compare their observations and thoughts with hunters from other communities and locations, when deciding upon where to go hunting specifically. Today, hunters are very mobile and maintain a social network with people living far away from their home communities. Hunters feel that the complex picture of beluga behaviour which they construct on the basis of a multitude of own and others' observations and interpretations is more correct than the scant picture created by biologists. That biologists actually work with a lot of factors (see e.g. Heide-Jørgensen & Reeves 1996 or Heide-Jørgensen et al. 1993) does not take away the basic feeling hunters sometimes have, that biologists really do not know what they talk about because they are outside the continuous discussion of the whereabouts of beluga whales. This *social* distance of biologists is intensified by the *physical* distance which symbolically and physically becomes manifest when they use air planes and live in Nuuk. Hunters would like to see the factors, they consider important, to be part of the research. With respect to beluga whales, hunters would like the biologists to reflect more on the interrelationship between ice conditions, fish banks and beluga whale movements. For example, many hunters try to increase the rate of encounter by searching in the areas known to be preferred by the whales. This is especially the slopes of the fish banks, where they feed, close to the more concentrated ice formations as well as icebergs. Beluga whales are thought to look up these locations actively and by preference. Beluga whales are thought to have an affinity to ice. One hunter even distinguishes between areas where one is more likely to encounter males from areas where females with calves feed. Some hunters also consult ice forecasts from the internet in order to judge the ice coverage in the areas preferred by the whales. These maps, they point out, are indeed only vague guides because the ice moves constantly, and the presence of whales also depends on wind and human activity. The hunters argue, for example, that beluga whales tend to hide in the ice when there is wind from the north. When the wind comes from the south the whales are found in open water because of the waves. This kind of contextualisation turns beluga whales into active animals in a specific but changing environment. This is a major conceptual difference between hunters and biologists. The

former are interested in sightings which indicate presence and movement in relation to a changing environment while the latter are interested in sightings which indicate a number of non-submerged whales to be used in population calculation.
Ice is also singled out by biologists as a main factor influencing beluga whale presence and migration:

> Ice conditions undoubtedly affect the distribution and movements of the whales, and possibly also the size of aggregations (pod sizes). They may also affect the detection probabilities and the abilities of observers to judge pod sizes. Significant changes in ice conditions off West Greenland in March can occur on time scales of hours, days, or weeks. The within-survey effects of such changes are virtually intractable...[W]e can make general comparisons of ice conditions between surveys, for example by examining satellite images and tediously plotting the data collected during the surveys on ice types and percent coverage... (Heide-Jørgensen & Reeves 1996: 71).

Speculations on the part of hunters and biologists on the relationship between ice-coverage, whale presence, and migration pattern determine much of their activities. But where a hunter desires to encounter whales, the biologist wants to render the demarcation of a specific study area (with or without whales) probable. Hunters may want to increase their activities in a certain area, at a certain time depending on a number of factors in order to increase the chances of seeing and encountering whales. Biologists, on the other hand, are preoccupied with ensuring that the ice-conditions do not undermine survey viability and inter and intra survey comparability. One person on board the survey air plane, notes the specific character of the ice every second minute. Despite these detailed observations, biologists integrate few reflections on the specific relationship between ice and whales at the particular time of observation which could influence population calculations. Reflections on this kind of relationship is pursued primarily to support standardisation (in survey design as well as ice conditions) and thus to improve the comparability of survey results. Ice and beluga relationships are not used to introduce different correction factors because:

> ...we can only speculate about the ways that different ice conditions might affect the actual behavior of the animals, and our perceptions of their behavior, during the surveys (Heide-Jørgensen & Reeves 1996: 71).

Hunters' success in whaling depends, among other things, exactly on this kind of speculation, though it may prove wrong in some cases. Whales may concentrate in or move between certain areas, get closer to or farther away from the coast depending on a variety of factors as mentioned above. Hunters criticise biologists for ignoring these - at least for the hunters - important speculations: "The biologists overfly the wrong areas", "The whales hide in the ice, where they are difficult to spot", "Biologists should fly parallel with the coastline - then they would be able to spot more whales in the ice leads and cracks which are also mostly parallel with the coastline"

Hunters also have a number of factors they look for when trying to understand whales - factor which may be quite different from the biologists': Number of sightings by different socio-economic groups (trawlers, cutters, skiffs), catches, number of young animals, migration routes, behaviour (towards vessels e.g.), foraging and feeding strategies to mention a few examples. Of major importance for hunters is the *accessibility* of beluga whales. In this respect, hunters and biologists may be concerned with two different things: Hunters are concerned with the continued accessibility of beluga whales; biologists are concerned with the continued existence of the beluga whale population. When hunters are worried about changes in the presence and sightings of beluga whales it does not necessarily follow that they think the size of the population has changed. What has changed is the accessibility and the beluga whales may just have moved somewhere else - often farther at sea or into the ice, hunters argue.

At the request of JCCMNB the Inuit Circumpolar Conference, the Home Rule of Greenland and the Association of Fishermen and Hunters in Greenland initiated a project in the beginning of the 1990s to focus on the hunters' knowledge of beluga whales and narwhals. A total of 167 hunters were interviewed in four northern municipalities. They were questioned on issues such as seasonal distribution, hunting seasons, distributional changes, abundance of whales, mating, time of calving, frequency of birth, length of calves and foetuses, feeding prevalence, different types of beluga whales, animals preying on whales, hunting methods and technology, hunting efficiency, catches, disturbing factors, catch registration and finally rencounter of struck-but-lost animals. The interviews make up an important basis for a closer understanding of hunters' perceptions of the changing and fluctuating *presence* of beluga whales - changes which biologist may interpret as signs of a declining population.

Hunters report that the beluga whales have become less frequent, disappeared from certain areas where they used to come and have delayed their migration. To account for these changes the following arguments are put forward: beluga whales have changed their migration route and they now migrate farther at sea and in the case of changes in the Disko area they have now chosen to migrate westwards rather than eastwards around the Disko Island. Several reasons for these changes are put forward:

- early freeze-up and late break-up of the land fast ice in the Vaigat Channel have prevented the whales to migrate through the channel,

- traffic day and night as well as noise from all kinds of vessels (large vessels are however blamed the most) disturb the beluga whales close to land

- the drive hunting method pursued in Upernavik and in the Disko Bay area has forced the whales to change route

- intensified fishery and trawling in whaling areas is disturbing the whales and their foraging close to the coast

- wind direction affects the ice condition, and thus the habitat of whales

- trawlers and some cutters move further north to meet the beluga whales on their southwards migration in the fall thus forcing the whales to migrate through the offshore waters, west of Disko Island.

- the beluga whales move according to the prevalence of food, which again is circulating with the sea ice changes

The survey statements indicate that the hunters have experienced a decline in the presence of beluga whales. However, some informants state that they have not seen any negative changes - a view which can also be found among some hunters in Sisimiut - a town which was left out of the survey. It is important to note that the hunters refer to a decline in presence and accessibility - not to a decline in the population as such,

necessarily. Hunters think of beluga whales as active and sensitive animals which respond to conditions in their surroundings, where traffic, noise, hunting and ice-conditions are the most prominent factors. These differences between biologists and hunters have implications for the elaboration of methods to integrate local knowledge in biological research.

The biologists' preoccupation with population estimations in numerical terms, often implies a special focus on factors which influence the mortality rate. Hunting/fishing stands out as a key factor. As Roepstorff states “one fish out of the water is...one fish less in the stock” (in press). Basically, resources are considered limited. Human activity is also the only factor which really can be controlled and managed. When observations decrease to a point where biologists consider it alarming, managers are expected to take affair and restrict hunting activities.

Contrary to this, the hunters’ preoccupation with availability in a qualitative sense may turn his interest towards a multitude of reasons and explanations. Indeed man does influence availability, but so do wind, temperature, ice etc. The major concern is whether they are available and accessable. From this point of view the animals are not resources, and they are neither limited nor unlimited. Rather, they are within reach or elsewhere. If this perspective is true, hunters can not be accused of viewing animals as basically unlimited - a critique which emerges from time to time. However, occasionally, hunters talk about episodes and activities, which have taken great toll on the number of animals available: The collection of seagull eggs is an example. Some hunters have expressed content with the present regulations of this activity as they fear that otherwise they would collect all eggs within reach for the market. Other examples are the previous widespread use of drift nets for salmon, which had a disastrous effect on the number of porpoises to be observed. Trawler crews are expressing concern about the number of small and juvenile fish they get as by-catch. Numerical concerns quite similar to the ones of biologists can thus be found among hunters and fishermen. The question is now, whether this concern is based on a perception of a population or if it is a result of a concern over availability? This seems to be the crux of the matter and it is of major importance for the future communication between biologists and hunters. This question indeed needs to be looked more into. However, a tentative answer will be suggested below.

Well defined and demarcated populations or stocks are not used by hunters as a framework for understanding fluctuations in the presence of animals. The number of animals observed at one location is not understood as an index for the overall population. I claim that availability seems to be the major concern of hunters. Availability is dependent upon a multitude of factors, one of which is conditions for reproduction. In some cases, hunters and fishermen have expressed concern about the reproductive possibilities of some species. Although availability is not strictly associated with the idea of a population in numerical terms, hunters are well aware of overall fluctuations. Caribou hunters for example talk about years where the number of animals, and especially the young ones, decreased due to natural causes (e.g. ice preventing optimal feeding). Occurrences which are understood as extraordinary, but nonetheless happen from time to time, can take a great toll on the number of animals available and hinder optimal reproduction possibilities for a period. Some human activities are also considered extraordinary compared to small scale hunting and fishing, which is commonly perceived to be non-destructive towards the reproduction of animals. The fishing with drift nets by foreign fishermen (which does not occur anymore) and large scale trawling are pointed out occasionally as having a severe impact on the reproduction and availability of animals. But the concern over availability, reproduction, extraordinary occurrences and numbers is not the same as to be concerned with the state of a specific population. However, these concerns do constitute a platform for an interface between hunters and biologists. The work of Ferguson et al. (1998) in Canada is an example where such an interface has been productive.

The concept of population, one of the powerful metaphors of natural science, is used by hunters and KNAPK representatives when arguing against the assessments of biologists. Hunters often claim that the population is larger than assessed by biologists. As the size of a specific population is the crucial point of negotiation, hunters are forced to put forward statements and counter arguments associated with this concept. Perhaps as a consequence of this as well as the existence of different frameworks for interpreting observation, interfaces at this level seems to be very problematic. Both biologists and hunters protect their worldview and paradigms. Disagreements are often perceived by hunters as a clash between an inside and an outside perspective, i.e. a Greenlandic vs. a Danish, a traditional and practical vs. a modern and scientific. This is not an uncommon perception. Discourses on development and resource management are frequently

contextualised with reference to locals vs. incomers, resource users vs. planners. The work pursued by Nuttall and Jedrej (1996) indicates that rural development issues in Scotland are phrased in a similar way: between black natives and white settlers. Biologists may, in a similar vein, produce a dichotomised image of the disagreements which stresses the clash between the subjective economic and short sighted interests of the hunters on the one side and the objective scientific and longsighted perspectives of biologists on the other side. Such perceptions can be maintained despite the fact that the world is not as dichotomised as presented in the images. While the images does provide temporary frames for understanding disagreements and for channelling frustration they can in fact uphold and prolong the disagreements.

The disagreements between hunters and biologists may have its roots in the understanding of what over-harvesting implies. Commonly, over-harvesting means that one does not take more than the population can reproduce. But if hunters do not have a clear and explicit idea of a population which can be over-harvested, how does their concept correspond to the common view of sustainable use. In Greenlandic, over-fishing and over-hunting is normally translated into *aalisapilunneq* and *piniapilunneq* respectively, words indicating that one has taken more than one needs. The criteria for over-harvesting is a socio-economic one, not an ecological one. The differences in understanding sustainability and over-harvesting are reflected in the discussions taking place at the organisational or institutional level.

Interfaces at the institutional level

This level is action orientated, concentrating on ways not only to respond to observations and interpretations but also to respond to political, socio-cultural and economic needs. The creation of institutions is one way to respond. Knowledge of these institutions play a significant role in the success of hunters (Sejersen 1998, 2001). Hunters' access and disposition possibilities are limited is several ways: by self-imposed regulations and by regulations produced by the Home Rule. The division of beluga whales among participating hunters is an example of self-imposed institutions which limit the access of individual hunter (Sejersen 1998, 2001). The categorisation of the hunter community into occupational and non-occupational hunters, where the former has been divided into two

new categories (economically dependent and less dependent upon hunting and fishing), is an example of such an institutional setting which influences the hunters' success and access. Obligations and rules for meat sharing can be considered as an institution which also limits the hunters' free disposition of his catch. In Canada and Alaska, Native peoples have numerous social, spiritual and ethical rules and obligations which influence their use of nature and their relations to animals (Fienup-Riordan 1999; Scott 1996) – institutions which are rare in Greenland. Where the institutions in the North American Arctic are oriented towards sustaining the social relationship and reciprocity between community and animals/nature, Greenlandic hunters seem to be preoccupied with rules which sustain the social and economic relations within the community itself. While North American Natives argue that they have institutions based on the traditional worldview which prevent over-harvesting (the actual effects of these institutions on the resources are not dealt with here), Greenlandic hunters seldom put forward explicit institutions and rules, founded in tradition which are directed towards the prevention of over-harvesting – the major concern of managers and biologists. Consequently, the Home Rule has implemented a series of regulations which influence the hunters' access and disposition rights (Sejersen 1998, 2001) in order to protect the resources.

It is interesting to note that interfaces at this level (beyond what is taking places locally) are increasingly been occupied by the hunters' organisation, managers and politicians. Hunters are seldom integrated as actors at this level, and biologists often point out this highly political level as outside their working field. Although the Home Rule from time to time arrange local hearings (information tours in the language of managers) on specific management issues, these meetings rather have the character of consultations. Little management responsibility is delegated out to the local level and hunters neither have the competence nor position it takes to be active in the management. The devolution of wildlife management as seen in Canada and Alaska is not encountered in Greenland. The development of constructive interfaces at this level seems to be hindered to a great extent by the centralised bureaucracy and negotiation practices. Although this system has been very appreciative towards the hunters' points of views and interests, it faces new challenges if it has to integrate local knowledge in a meaningful way. In the chapter "landscapes of memory and vision" some ideas for how to involve hunters at this level are put forward

At the institutional level the questions of what sustainability means, how it is implemented and whom it benefits are discussed and negotiated. No matter how it is defined it will pervade the social life of the hunters. The tools used to implement sustainability may or may not correspond to local ways of seeing things. The classification of hunting licences into two categories is an example. Many hunters have complained that it does not reflect the socio-economic differentiation of the communities. Local perceptions of socio-economic conditions and what are considered fair regulations can be important aspects of local knowledge to be integrated at the institutional level. All in all, it seems as if the hunters are preoccupied with establishing social sustainability – socio-economic continuity and equity at the local and national level (Sejersen 1998). This perspective is integrated by managers when defining regulations which are directed towards maintaining ecological sustainability. Biologists play an important role in the assessments of the ecological sustainability. Being the sole producers of knowledge on ecological sustainability biologists seem to take up a powerful role. However, this role is more in setting the agenda than in influencing the end result as the hunters' organisation is powerful. The managers have become the inter-mediators between hunters and biologists at this level.

The interests of hunters manifest itself very clearly at this level. To sustain the continuity of their households, hunters have to be able to find strategies to improve the flexibility of accessibility and disposition. Arguments for this purpose should not mistakenly be positioned at the paradigmatic level.

The interfaces taking place at the three levels are quite different. While they are quite easy at the empirical they tend to be problematic at the paradigmatic level due to different frames of references. At the institutional level there is no interface between biologists and hunters as this level is occupied by managers, politicians and hunters' representatives. The construction of interfaces where biologists, managers and hunters can meet are as much social interfaces as interfaces where different forms of knowledge are presented and negotiated. Consequently, aspects of representations, power relations, images, and politics are likely to saturate the interfaces. Despite differences the chapter argues for optimism as enriching, constructive and meaningful conversations are possible and are already taking place formally and informally.

The social interfaces - be they formal or informal - are crucial to look more at in order to understand the potentials of mutual communication and inspiration. This is the endeavour of the next chapter.

Communicating local knowledge and the art of active silence

While the discourse on Traditional Ecological Knowledge have occupied scientists, indigenous peoples and politicians throughout the North American Arctic for decades the demand for the integration of Greenlandic hunters' knowledge into management and biological assessments has only been a significant phenomenon within the last ten years. In 1999, the local knowledge discussion culminated when the parliament adopted a the new environmental law of 29. October 1999 where the need to integrate local knowledge is specified in §2, 3. This political initiative can however be seen as a political acceptable solution to the present critical management deadlock characterised by – among other things - a growing distance between the hunters on the one hand and the biologists and managers on the other. This distance often manifests itself in rather poor communication strategies, where especially hunters have expressed feelings of frustration and alienation. By requiring the integration of local knowledge by law, the management setting has changed. Science is no longer the basis for management as it formerly was. This gives hope to hunters who anticipate that the integration of their local knowledge will reverse the pessimistic biological reports which usually call for the introduction of further hunting restrictions. Hunters used the newly acquired legal possibility when they argued for a two year moratorium on further regulations of their beluga whaling (Press release 2001), as local knowledge had not been integrated. Hunters have used this paragraph as an attack on the privileged knowledge position of biologists but also as an attack on managers. Local knowledge used in this way is political empowerment at the local level. At the practical level, researchers – who are urged to integrate local knowledge – however face problems finding valid ways to select informants and ways to communicate with local

people. The process of improving social interfaces and integrating local knowledge does not take place overnight because it requires new competences among both researchers and local users. In this chapter I argue that a new dialogical practice has to be established – a practice which has active and attentive silence as an important ingredient.

Three reasons to have local knowledge integrated

Communication between stakeholders in the knowledge arena is influenced by the intentions of the stakeholders. The integration of local knowledge can roughly be organised around three arguments:

- the political argument
- the utilitarian argument
- the knowledge argument

The *political argument* has roots in the democratic ideas emphasising decentralisation and citizen participation. Local participation is considered as a necessary and beneficial aspect of democracy and it may be pointed out that it is impossible to pursue management from a central institution without local participation. Thus the whole idea of encompassing and centrally located knowledge is challenged but not necessarily the central institution's authority to manage. Paradoxically, integration of local people, co-management and decentralisation may be considered as means for the administration and politicians to improve the central administration. This paradox can be seen in the long lasting controversy about the differences between co-operative management and co-management in North America.

The *utilitarian argument* has local integration and local involvement as a success parameter in itself as local involvement is perceived to raise the awareness of the locals, their responsibility and understanding towards new projects and policies. This utilitarian argument is basically founded on the idea that local compliance to centralised management is better if the locals are involved in some way. Sometimes it is anticipated by a central administration that the experiences of a few local participants involved in a project will have positive effects – even snowball effects - in the community as such.

Finally, the *knowledge argument* puts emphasis on the integration of local knowledge and people because their empirical, paradigmatic and institutional knowledge (Kalland 1994) of the local ecological and social environment will be a constructive part of the problem solution phase. Some parts of the research community consider local knowledge a valuable contribution to their research and their hypothesises. Hence local knowledge/local people should be integrated as it will make valuable contributions to political and scientific knowledge production.

All three arguments are inter-linked in some way, but very often they are positioned in a hierarchical relation. However, it can be useful to flesh out these three dimensions as they may influence how researchers communicate with local people. If for example the integration of local people is motivated by the wish to improve the awareness of the local people (the utilitarian argument) in order to make them more receptive to new initiatives, communication can become very paternalistic. If political decentralisation is promoted as an end in itself and not followed by respect, responsibility and decision competences to the locals, communication can also take very paternalistic directions. The three arguments are maintained by both locals and centrally based persons.

If local people sense a potential asymmetrically power relation between them and the other (as in the case of paternalistic intentions) the process of communication is often eroded and faces obstacles. In order to be able to assess the power relations and perhaps the explicit or implicit purpose of communication, local people often request researchers to explain purpose, methods, institutional affiliation, funding etc. of projects. In this way researchers are positioned in an imagined or real landscape of power. The position within this landscape is vital for further co-operation and communication. In Greenland, biologists and the Greenland Institute of Natural Resources make a great display of the clear-cut distinction between themselves as independent researchers and the institute on the one hand and the bureaucrats in the sphere of political and management decisions on the other hand. When biologists cross the line between science and politics – if they in seldom cases choose to do so - they normally underline that they do this “trespassing” as an individual – not as a biologist employed at the institute. However, it is at times difficult for biologist to maintain this position, and they may cross the line. In a publication on beluga whales (Rydahl and Heide-Jørgensen

2001: 28) the present hunting level is characterised as catastrophic - a statement which is political indeed. The statement sets off a political agenda and is a way to burst the political process in a certain direction.

Despite the political engagement of most biologists the distinction is produced continuously but it seems to be a futile effort. Hunters and fishermen still consider biologists as powerful outsiders influencing politics effectively with smooth scientific rhetoric which has become the accepted language in the political arena. Seen from the hunters' point of view the political sphere has been colonised effectively by biologists and made it harder for hunters to have a say in management. To be political successful, local people often communicate their perspectives in ways which are "imitations" of scientific rhetoric and in the same line of thinking. Thus, for example, hunters and their organisation KNAPK often respond to low population estimations by giving higher estimations. Biologists seem to have been very successful to dominate the management discourse – an ability which derives in part from imposing one's construction of reality as the natural order of things (Morrow & Hensel 1992: 38). This strong position of biologists – seen from the hunters' point of view – is made worse by the general perception of biologists as outside intruders who interfere in internal matters which can only fully be understood by insiders. This strong sense of boundary (inside/outside) – a sense maintained by the invocation of their possession of knowledge radically different from scientists/outsiders – is a major problem when communicating. In order to improve communication one of the first tasks is to break down this boundary between inside and outside to a certain extent. But how is this done?

Breaking down the communication boundary

If the existence of a solid boundary between what is considered two different knowledge and interest communities is taken as the point of departure in a communication situation, communication of knowledge is *between* communities. However, if it is possible to establish a shared community communication of knowledge is *within* a community. Experiences from anthropological fieldwork in Greenland indicate that it is quite necessary to have a firsthand experience of the activity in question and the land/seascape in which it takes place in order to improve communication with hunters. When communicating a sincere interest and

appreciation of the other and the person's locality, the person starts to be more confident and open as if they where talking to an 'insider' who are familiar with local problems, local place names and local episodes of community importance. When communicating 'insider'-knowledge and familiarity with the local discourses, informants often start to be more precise in their descriptions - their narratives become more committed, less abstract and less political. To make the dialogue a more reciprocal one and thus improve communication researchers have to be able to make meaningful and valuable contributions as well. I was, for example, often asked about the snow/ice conditions in areas I had been visiting, number of caribou hunted, names of participating hunters, number of days away etc. By asking me these question my position as an outsider gathering knowledge from insiders was to a certain extent transformed and the relation becomes reciprocal where interesting and useful insider observations and interpretations can be communicated. This is not to say that researchers can become or can be considered true insiders necessarily.

Embracing and comprehending the world at the same time

In order to establish an equal relationship between researcher and informant in the best possible way the researcher has to meet the obligations and expectations defined by the standards of the inside-community – the host community. It is my experience that information about the research project in question and its perspectives does not establish equality – it only reflects at minimum a dedicated and thoughtful outside researcher approaching a community. The social obligations and expectations of the inside-community which one has to approach might take very concrete forms: sharing of meat and other consumptive items, exchange of information, lending tools, babysitting, giving a hand with the boat etc. I claim that a practice involving the observance of community standards of trust, respect and reciprocity also has consequences for the communication process. In Greenland, it is my experience that respect can be communicated during conversations by not pushing the other for answers or impatiently phrasing new questions during periods of silence. The narrative structure used by many Greenlanders may – depending upon person and social context of course - often contain thoughtful periods of silence. If this productive silence is interrupted by new impatient questions or comments it can indeed destroy the conversation. This silence symbolising respect is quite different from the silence symbolising lack of interest. Once, a hunter told me about an communication experience he had had with a biologist with whom he did surveys for a period over two weeks. During this period the

biologist never initiated a dialogue nor showed interest in the hunter's life and opinions. This apparent disinterested in the hunter's life and knowledge is a paradox as he is considered a very good and knowledgeable hunter by his fellow hunters. The hunter explained that he tried to be as polite as possible by not starting long narratives about his life, knowledge and suggestions for management initiatives or changes in survey methodology. He kept quite in order not to be social impolite and intrusive – a silence of respect towards the biologist - the host. However, the hunter understood the silence of the biologist as total lack of interest and respect. The social context was in a sense abnormal for both the hunter and the biologist as it was taking place outside the normal social spheres of both the biologist and the hunter; in a plane and in a research camp. However, the setting was chosen and defined by the biologists and in a sense the hunter expected the biologist to take communicative affair as the host. I suppose that if the setting had been reversed the biologist would also expect the hunter to take social and communicative affair. This leaves us with a communicative paradox. First, as a researcher one has to be silent to a certain extent and not too pushy and impatient. On the other hand local people expect researchers to be active and take initiatives in certain social contexts. The proper management of active silence and initiating communicative processes is indeed dependent upon context and social skills of all involved. There are no straight forward answers to the right balance? A second paradox that strikes me, as a researcher, is that of the different context requirements. On the one hand the researcher is met with scientific requirements for planning, well defined methodology (e.g. well defined questionnaires), efficiency and systematic investigation, and on the other hand the researcher is met by the fluid, differentiated, undefined, and always changing social requirements and expectations of the local social community. As a researcher one can put much energy into preparing communicative strategies based on scientific methodological considerations just to face the cruel facts of social life: success often depends on how you are as a person and how well you are to read, accept and respect the social life of the persons with whom you interact. Consequently you are your own method! Huntington's experiences from his local knowledge studies in Alaska (1998) makes him conclude that semi-structured interviews seem to open up for a variety of possibilities. You actively direct the interview but you remain open (silent) to the narratives of the local people and in this way you are open to new ways of structuring observation, interpretations and ways of acting. Anthropology has really been struggling with this paradox of how to *comprehend* and *embrace* the world at the same time. I think many biologists recognise the problem as well, but the way they deal with the problem may not be futile. I see a tendency among biologists

to downgrade their embracement (or phrased differently: their being in the world as true, active social beings) by promoting an image of themselves as detached, non-political and objective producers of science. Opinions and decisions are considered the business of politicians as argued by biologist Arild Landa: ”As biologists we are only to provide the foundation for decisions” (Atuagagdliutit/Grønlandsposten 2001). According to the journalist he did not want to put forward a statement neither for nor against caribou hunting in the winter. Although there is clear division between scientific work and political statements, local hunters may find it difficult to relate to such an artificial separation. Things are not considered as clear cut in the daily lives of the hunters and it might be difficult to relate to a person with amputated, hidden or oppressed opinions. Consequently, locals often create new social identities to stick onto biologists in order to make them real social beings with interests. Unfortunately, they tend to attribute motives to the biologists and the profession as such which usually have no foundation in reality. At a local knowledge workshop in Nuuk, hunters for example started to accuse biologists for unacceptable management policies. No matter how often, during that meeting, biologists underlined the fact that they are not the policy makers, the hunters continued to direct their management complaints to them.

The management of social identities also faces the anthropologist. At times, during my stay in Sisimiut, I was asked about my opinion about controversial issues as a way to locate me in the landscape of opinions, interests and conflicts. And answering was no easy task as I wanted to understand, respect and embrace different perceptions and ideas on the one hand and on the other hand actually had quite strong personal opinions about specific matters. Additionally, informants often made inquiries about whom I had been in contact with locally, gone hunting with etc. as if they wanted to position me in a social landscape of networks and positions. It is my experience that the management of social identities in changing social settings is a continuous challenge for all researchers.

Active silence in the genuine dialogue

Faced with the need and wish to establish communication with local people researchers have to bear in mind that there is a clear difference between communication and information. I will argue that one of the differences is the art of active silence. The German philosopher Martin Buber (1947:19) works with three kinds of dialogues:

In the *genuine dialogue* the participants really have the other in mind in their present and particular being and turns to them with the intention of establishing a living mutual relation between himself and them. Silence can be part of this kind of dialogue. The *technical dialogue* is prompted solely by the need for objective understanding. Participants do not meet to "turn towards the other" but expect a mutual flow of information. Finally, Buber talks about *monologue* which is one-way communication often disguised as dialogue. Buber sees active silence or attentive silence as a basis for genuine dialogue. Aubrey Hodes (1972: 22), who had several conversations with Buber, explains that all their meetings started with unconscious silence: "After sitting down there was always a silence - not a tense silence, uneasy as between two people who were not sure of each other, but a silence of expectation. This was not consciously agreed between us. It was a flow of peace and trust forming a prelude to speech. The silence was the silence of communication". Silence is the welcoming acceptance of the other and the sign of respect. It is a general comment from Arctic indigenous peoples that Western experts, administrators etc. are too talkative (Scollon 1980). Often, hunters complain that the scientists never listen to them - they are too busy talking - that is one of the reasons why their assessments are erroneous and incomplete seen from the hunters' point of view. According to Kirsten Hastrup (1990: 20) silence is a vital part of the culture-specific experience. A too narrow focus on verbal statements distorts the experiential reality of people.

I claim that much communication between researchers and local people lacks silence - also if we expand the meaning of silence. Even with mutual attentive minds and silence from participants, the setting of the dialogue is often too noisy due to the political, economic and scientific interests always lurking in the background. Another aspect which adds to the background noise is the holistic character of the problem-complex. What may be seen from the researchers' point of view as a 'simple' dialogue about, for example, beluga whales may include a mixture of economic needs/problems, frustrations about management policies, feelings of marginality, cultural aspirations etc. seen from the local hunter’s point of view. There seems to lie a problem here when complex and closely interrelated social, economic, cultural and environmental issues are to be dealt with as solely an environmental issue. The general expectation that biologists are to integrate more and more cultural and social 'stuff' in their research is a product of this (deliberate?)

political manoeuvre to gather the problems in one camp! The problems faced by hunters today can neither be solved by biologists nor reduced to the popular solution of integrating local knowledge.

Silence, reciprocity and trust are basic ingredients of a successful relationship with local people - aspects which take time to establish. Biologist Christine Cuyler (2000) has made a list outlining suggestions for enhancing informal social knowledge exchanges:

- A mutual exchange of information, over time, is an important ingredient.
- Be a listener! By listening you inform the other person that what they have to tell you is important to you, as is the person telling it.
- Initially ask questions only, or word your information in question form, e.g. would you like to know why I doubted that that caribou was a female?
- Use open-ended questions. These allow the hunter to decide what is or is not important to impart.
- Accept the teller's method of communication. Don't arrive with an agenda/list of information you want, as this may block communication. Instead let the hunter talk and unexpected "gold-nuggets" come along the way. A few open-ended questions may help to restart lagging conversations.
- Make no authority "power-trip" apparent, e.g. assumed perception of well educated intelligent expert versus the non-educated less intelligent hunter. If someone suggests you are an "expert", brush this aside/negate immediately. They are likely "testing" you, and we all have things to learn.

Cuyler additionally suggests that the researcher should expand personal networks to local users and establish a growing relationship based on reciprocity. Other biologists participating at the local knowledge workshop in Nuuk (April 2000) made similar suggestions based on their experiences and one condensed the discussion by simply

saying that one should learn the art of drinking a cup of coffee, indicating that the interesting dialogues are not necessarily found at community hearings or by using hardcore questionnaires but are to be found in face to face relations mediated by a cup of coffee added attentive silence. But communication about knowledge takes place in a highly political arena and - as will be shown in the next chapter - the position of indigenous peoples in the discussions on sustainability gives rise to problems which may in fact marginalise them further although their local knowledge is integrated.

Landscapes of memory and vision

Contemporary Arctic coastal communities often base their living on the flexible and creative combination of marine and terrestrial resources as well as on mixed forms of employment and subsidies. The resources used originate in the local area as well as from outside the vicinity of the community. The possibilities of a community to deal successfully with continuity and change is among other things dependent upon its knowledge of resources. Thus the presence of particular resources as well as users' knowledge about them is frequently pointed out as the foundation for community diversification and change. Today the employment of knowledge for successful living in the Arctic is emphasised as one of the most significant ingredients in community survival and viability. This gives local knowledge an important position in the dealings with coastal communities in the North.

The challenges of understanding, qualifying and integrating local knowledge face most researchers today no matter the research fields. Additionally, most Arctic political institutions have become more receptive towards especially indigenous peoples' claims to have their knowledge integrated. All in all, indigenous peoples in the Arctic have been able to put local knowledge on the agenda of most stakeholders and made it an integrated aspect when negotiating how to build a sustainable development. The indigenous peoples have thus been able to regain some influence as political subjects in the ongoing discussions about the future of their homelands. One can say that we have entered a period of knowledge claims which has emerged in the wake of the land claims period.

However, the way local knowledge is perceived, collected and used may in fact marginalise the indigenous peoples further although their claims to their traditional territories may be strengthened. I will argue that the reason for this lies in the retrospective fashion local knowledge is dealt with. This chapter outlines an alternative way to comprehend local knowledge - a way which positions local knowledge in the space between experience and vision. It will be argued that this perspective on local knowledge also has implications for the way we understand indigenous peoples' landscape perceptions as well as their strategies for continuity and change which indeed have implications for sustainability and community viability.

Local knowledge as experience

In political rhetoric, in negotiations and in much anthropological as well as popular writings about Arctic indigenous peoples, the close attachment of people to the land is underlined. Their cultures, economies and identities are inextricably tied to their traditional lands and resources as mentioned in for example Caring for the Earth (IUCN, UNEP and WWF 1991: 61). The localisation of people and their intimate attachment and belonging to the landscape is further emphasised by making it a *traditional* or *indigenous* occupation and use of the landscape. The accentuation of locality inter-links place, identity and culture, and place takes up an important role in the conceptualisation of culture (Hastrup & Olwig 1997; Nuttall 2001). As part of indigenous peoples' political mobilisation and negotiations, culture has become politicised and along with it local knowledge. Talking about local knowledge in the discourse of resource management also means drawing moral emphasis on the potentials of small scale, community, place, proximity to nature, particularity and decentralisation (Harvey 1996: 201). In the words of Lilburne (1989: 30) it is exactly by "...reviving the sense of place that we may be able to reactivate the care for the environment".

In the context of present asymmetrical political relations between indigenous peoples and governments, local knowledge (an especially in the form of indigenous or traditional knowledge) are in some cases *understood* as profound historical and well-founded experiences which deviate from the more ephemeral experience and shallow knowledge

of the colonial culture. On these grounds, local people may argue that their experiences have to be taken seriously. In the Arctic this argument has found political resonance, and the Arctic Council has accentuated that indigenous peoples' elaborate knowledge of the environment is equally important in the understanding of the circumpolar Arctic as Western science (Declaration on the Establishment of the Arctic Council 1996).

To further elaborate on the intrinsic relationship between indigenous peoples and the land, research has been pursued into issues such as indigenous place names, mapmaking, historical resource uses, landscape perceptions (practical as well as spiritual), archaeological and sacred sites. This attachment to the land indeed makes the Arctic a homeland for indigenous peoples and indigenous peoples often support such research. Movement in the landscape becomes more than just physical activity, it is a profound movement in time and memory. The special sense of selves-in-place through time has made Nuttall (1991, 1992) introduce the concept *memoryscape*. The landscape is indeed related to through memory. A memoryscape is constructed with people's mental images of the environment, with particular emphasis on places as remembered places (Nuttall 1992: 39). When one relates to the landscape as a memoryscape it becomes alive, meaningful and personal, and embeds persons, communities, places and activities in the rivers of history. Even though a memoryscape can be reflected in value preferences towards specific locations and by accentuating specific locations in narratives, memoryscapes may as often as not be felt rather than verbalized, and these affective bonds between person and particular places (Tuan 1974) can in the words of Howitt (2001: 173) be termed "places of the heart". Memory in Inuit communities has high cultural value and is used as a tool to guide activities and for intergenerational transmission of knowledge and to produce a sense of being and attachment. The terms homeland and memoryscape capture Arctic peoples' attachment to the land and resources and sense of place in a very meaningful way. Additionally it gives local knowledge resonance.

In some political fora like the Arctic Council and its working groups, indigenous peoples are urged to put forward local knowledge, and the AEPS, for example, affirmed and recognised that one of the most important ways to involve indigenous peoples in the implementation process was through their knowledge about the environment and ecology of the circumpolar region (Nuuk Declaration 1993, see also Alta Declaration 1997; Brooke

1993: 3). The political and symbolic implications of these processes are tremendous and have put Arctic indigenous peoples in the forefront of global indigenous politics and in their strive to realise self-determination. But their participation in this important Arctic co-operation is understood to be legitimate because they have *knowledge* about their homeland.

At the *local* level, experience and local knowledge guide the hunters and are constantly integrated in their daily activities. When out in the landscape, hunters may look up or point to places of past activities, previous used locations for fishing, whale and seal hunting, shelters and camps etc. When asked to draw hunting areas, travelling routes and sites on a map, one often gets an elaborate picture of their past activities in extraordinary detail, and the occupation, use of and attachment to the landscape becomes apparent. These maps may also indicate the close attachment and extensive knowledge of specific areas by some families and hunters. Very often a hunter will return to particular hunting areas year after year. When returning from hunting trips experiences are often communicated to other hunters whereby their local knowledge is set in perspective, updated or expanded. When drawing maps of past uses hunters often recall changes in natural conditions and presence of animals, and this sort of data may constitute an important source for resource managers and researchers.

Local knowledge as vision

However, this perspective on local knowledge confronts us with a problem. When local people are embodied in locality with its associated ideas of roots, belonging and attachment it may not reflect the dynamic, conflicting and negotiable engagement people have with the landscape and each other. Local knowledge becomes founded in a very *retrospective* perspective, and that poses a problem when discussing sustainability which is conscious planning for the *future*. The concept of sustainable development is indeed looking towards the future and invites to the elaboration and presentation of coherent visions (Langlais 1999). Studies in local knowledge and the 'mapping' out of memoryscapes may indeed miss this point or in fact be set up in ways which actually hinder indigenous/local people in presenting visions for sustainability. If local people get

trapped in the retrospective perspective they are deprived the possibility to make valuable contributions to sustainability.

Arctic indigenous peoples certainly have visions for their future and are committed to pursue such visions. Resource use and management are such areas and representatives for Arctic indigenous peoples have continuously put forward visions underlining self-regulation among other things. Although Arctic peoples' visions may not take up the prominent position it ought to in all political fora, examples of the contrary also exists. The comprehensive vision of Inuit to take control over their own future seems to have been maintained throughout the long-lasting negotiations leading up to the creation of Nunavut (Langlais 1999). Their commitment to establish sustainable futures for their communities are however not always welcome in fora where their local knowledge should play the leading part. Visions are too often understood as expressions of political activities and this may not be welcome in fora naïvely demarcated as unpolitical. When local knowledge is circled out as *data* about past experiences it can pleasantly be detached from *political agendas* for future changes. In AEPS, for example, representatives of Arctic indigenous peoples have tried to express their perspectives and anxiety about the land but according to Brooke the representatives of the member countries express "...concerns that indigenous peoples are...trying to politicize the process rather than focussing their attention on the real problems of environmental protection and sustainable development" (1993: 13). This seems to be a backslash. Localism (and subsequently belonging) and especially Traditional Ecological Knowledge have become the means to gain political involvement for indigenous peoples, but it may prevent them from presenting their visions as they get trapped within a conceptual framework focusing on knowledge and attachment. Put another way: Indigenous peoples and local people in general are reduced to contributors of knowledge about particularities while managers and politicians maintain a position as those who draw up the general visions for the Arctic.

The collection and promotion of local knowledge (including mapping of traditional territories) has been an important and integrated part of an indigenous political strategy to improve and promote land claims negotiations and their position within political structures. As Brody notes: "The Indians say, with their maps, that they continue to use or need all of their territory" (1982: 174). The reference to past use and occupation can and must be understood as a clear manifestation of a vision of continued presence and

control. Furthermore, reference to the past is a tool to make strong statements about sovereignty and legitimate presence of indigenous peoples in their homelands. However these visions seem to be blurred as statements from indigenous peoples and the ways they are interpreted by outsiders often emphasise past use and traditions. But if we understand traditions to be revisited continuously and in creative ways in order to legitimise and structure visions and the social order as well as the regime of values in the present and future we redirect our attention away from the past. And this exercise may be more constructive when talking about sustainability.

Discussions of landscape activities include strong statements of critique and justification for specific social orders. The competing visions of social order saturate the differences in conceptualisations of sustainable development as much as differences in environmental perception and economic requirements. The ecological and economic aspects of sustainable development cannot be seen devoid of these social visions which guide the normative goals of resource distribution. Seen in this light the invoking of tradition is neither conservative nor static. It should not be solely understood as a rhetorical and political tool, but as much as a communication of a particular belonging justifying a social vision which makes sense and meaning to a particular social group. Paraphrasing Van Londen (1996: 57) I state that narratives are not a reflection *of* but a reflection *on* ethnographic reality. Thus the presentation or construction of a sense of place and belonging becomes an active moment in the passage from memory to hope, from past to future, and in the words of Harvey (1996: 306) "…the reconstruction of places can reveal hidden memories that hold out the prospects for different futures".

I claim that it is often a *forward-looking perspective* which landscape users engage in when talking about past landscape activities although it may take the form of *retrospective* rhetoric and narratives. The problem arises when retrospective narratives are only understood as such – i.e. stories about the past. Additionally, I take it as a general phenomenon that Man negotiates, formulates, mobilises, creates and re-creates narratives about the landscape.

These negotiations and dialogues about the landscape take place in a social space where the ordinary, the taken for granted, familiar and “here and now” is related to the expected, potential, and wanted. When people engage in dialogues about landscape

activities they negotiate the transformations and reproductions of society through time and space. They may re-open, re-invent or re-examine past experiences as an ongoing possibility to create meaning in the continuous orientation towards the horizon of potentials and expectations.

Visionscapes

In order to fully embrace the dual experience of both past and future I suggest that we should look as much into people's *visionscapes* as into their *memoryscapes*. The emphasis on vision departs from the popular idea about Arctic hunters, and hunter and gatherers in general as "...people with a short vision and a long history" as Feit (1994: 425) critically observes.

The basic argument here is that Arctic peoples relate to the landscape on the basis of both experience and potentiality. To underline the latter perspective, which emphasises expectations of the future, the concept visionscape is introduced. Present activities and narratives are intrinsically related to the continuous explorative movement towards the horizon of potentialities and expectations. By introducing the concept of visionscape I hope to add a dimension to the understanding of Arctic peoples' environmental perception, narratives, and landscape use – a dimension which gives concepts like homeland, memoryscape and local knowledge additional meaning because it diverges the retrospective understanding.

Local knowledge is also given new meaning if it is seen to be stretched out between these two poles of perspectives (the experienced on the one hand and the potential on the other). In the Greenlandic town of Sisimiut I have engaged in dialogues with local whale, seal and caribou hunters as well as snowmobile and dogsledge drivers (Sejersen submitted). People were asked to indicate their hunting areas, travelling routes etc. on a map and this method seemed as a great mover for memory and complex detail. However, when asked about where to go in the future (be it tomorrow or next year) a whole new picture began to emerge. People started to point out unmarked areas - and in some cases areas quite unknown to them. Their reflections on expectations were triggered and they started to outline multiple reasons for their future choices. Some underlined the need to manoeuvre in a socially

saturated landscape where social expectations were to be weighted up against hunting requirements. Others stressed the need to visit and explore areas for personal and psychological reasons. The need to plan activities in the landscape was of course also related to purely economic expectations and requirements of the family. These visionscapes defined within different time spans reveal a variety of ways to manoeuvre in the landscape and to combine experience and expectations. Additionally, the people commented on the potential conflict areas and outlined potential ways to overcome the conflicts. Discussions on visionscapes also crystallised their more general expectations and perceptions about the social and natural order of the landscape. Where some talked in great length about the bounded natural and social character of the landscape and the need to maintain this, others were eager to break down exactly this boundedness and open the landscape for mobility, exploration and development. In the controversies between drivers of snow scooters and dog sledges this seemed to be the crux of the conflict. Where the former considered the landscape open, robust and unlimited (both in natural and social terms) the latter emphasised the bounded, fragile and limited character of the landscape (for an elaboration see Sejersen submitted).

The landscape manifests itself as both a memoryscape and a visionscape. If both perspectives on the landscape are accepted as two sides of the same coin the successful use of local knowledge in the landscape is the ability to establish a fruitful relation between the two perspectives. It strikes me that landscape users engage in and maintain a dialogue with the landscape where they integrate several parameters and match them with expectations and past experiences. Some of these parameters are, for example, the intensity of human activity in the areas, presence of potential animals desirable for home consumption or market sale, the social composition and competences of the hunting party etc. This ongoing dialogue with the landscape has also been touched upon by Brody (1987: 89) in his description of northern hunters: "The seasonal round occupies grooves of cultural history, and draws upon archives of experience and knowledge. Hunting itself, however, must defy habit as well as follow it: no two seasons are identical, animal migrations are never wholly predictable. Hunters, following well-worn trails, must seize new opportunities, adjust the pace and direction of their movements to follow, intercept or find the animals upon which life depends. At each point along the seasonal round individuals must assess and process a mass of information. The habit and pattern of mobility set the scene; action within the scene keeps changing".

But how are these ideas related to sustainability? First of all the prevailing understanding of sustainability is linked to the idea of integrating future needs in present resource use strategies. Presenting Arctic peoples' visionscapes is a way that they may enter the sustainability discussion in a new and more constructive way which allows them to put forward their horizons of expectations and not be exposed of the danger of becoming reduced to presenters of local knowledge understood as collectable and non-political data. At all levels people engage in negotiations about visionscapes, their stability and legitimacy and often they fight to maintain their specific visionscape by referring to its embeddedness in past use and attachment.

Concluding, I claim that the elaboration of strategies for sustainability of Arctic coastal communities are as much related to peoples' visionscapes and their success in maintaining a meaningful dialogue between past experience and the horizon of expectation as to other aspects such as the resource base, economy etc. Arctic peoples enter with their visions the ongoing local, national and international struggle between groups with conflicting visions. Additionally, by strengthening the focus upon visions we can more fully embrace the flexibility and mobility which are at the heart of living in the Arctic.

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